CANADIAN FORCES COLLEGE / COLLÈGE DES FORCES CANADIENNES
JCSP 33 / PCEMI 33

MASTER OF DEFENCE STUDIES

OFFENSIVE AIR POWER IN COUNTER-INSURGENCY OPERATIONS – PUTTING THEORY INTO PRACTICE

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CONTENTS

ABSTRACT

Offensive air power has many strengths in modern warfare, but its utility in counter-insurgency warfare is not well understood. Many of air power's traditional strengths, such as strategic strike, have little use in a counter-insurgency warfare environment. In fact, employing offensive air power in a traditional manner may undermine the entire counter-insurgency effort. War-fighters and planners must understand the fundamentals of counter-insurgency warfare in order to effectively employ offensive air power. To ignore these fundamentals is to place at risk the outcome of the entire campaign.

This paper examines the roles that offensive air power can conduct in support of counter-insurgency warfare. It also examines which platforms, weapons and sensors are best suited to conducting these roles. Each role and its respective equipment will have various strengths and weaknesses when viewed within a counter-insurgency context. Ultimately, their usefulness will relate to how well they support the fundamentals of counter-insurgency warfare.

OFFENSIVE AIR POWER IN COUNTER-INSURGENCY OPERATIONS – PUTTING THEORY INTO PRACTICE

The power to hurt – the sheer unaquisitive, unproductive power to destroy things that somebody treasures, to inflict pain and grief – is a kind of bargaining power, not easy to use but used often.

Thomas C. Shelling[1]

The early twenty-first century has seen a resurgence in insurgencies and in counter-insurgency warfare. Despite this, most western militaries are primarily structured to fight conventional wars. Modern offensive air power with its 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 counter-insurgency 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 poor 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.[2] Airmen were also sent home by the US Air Force (USAF) because it was not sure how air power could contribute to the counter-insurgency campaign.[3] The application of offensive air power needs to be explored and developed so that it can contribute more effectively to the counter-insurgency campaign.

This paper will argue that it is crucial to thoroughly understand the fundamentals of counter-insurgency 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 counter-insurgency theory?" The paper will provide a framework for understanding how offensive air power can best be applied in support of counter-insurgency operations. It will show that an appropriate offensive air power strategy can only be developed by thoroughly understanding counter-insurgency fundamentals. Further, 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

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[1]Edward B. Westermann, *The Failure of Soviet Airpower: The Bear versus the Mujahideen in Afghanistan 1979-1989* (Maxwell Air Force Base, Alabama: School of Advanced Airpower Studies, 1997), 1.

[2] Thomas R. Searle, "Making Airpower Effective against Guerrillas," *Air and Space Power Journal* 18, no. 3 (Fall 2004): 13.

[3] Christopher Bolkcom and Kenneth Katzman, *Military Aviation: Issues and Options for Comparing Terrorism and Counterinsurgency* (United States Congress: Congressional Research Service, 2006), 17.

will be assessed and evaluated in terms of how well they are likely to either support or jeopardise the fundamentals of the counter-insurgency campaign. To enable a thorough analysis of the topic, the scope of this paper will be limited to the employment of offensive air power. While still important in aiding counter-insurgency campaigns, other air power roles such as intelligence, surveillance and reconnaissance (ISR) and rapid mobility, will not be examined.

The paper is divided into four chapters. Chapter One is an examination of the fundamentals of counter-insurgency warfare. It describes different types of insurgencies, focusing on their motivations and goals. The insurgents' aims and methods of warfare are considered within a broad strategic and political context, helping to create a framework within which the application of offensive air power can be better understood. Chapter Two looks specifically at the fundamentals of applying offensive air power directly in support of counter-insurgency operations. The pertinent roles of air power are analysed for their applicability, strengths and weaknesses within the counter-insurgency context. The chapter concludes with a set of air power factors which can be used to evaluate the suitability of equipment for use in counter-insurgency warfare. This equipment evaluation is done in Chapter Three with a review of platforms, weapons and sensors and their utility in counter-insurgency warfare. Their strengths and weaknesses are analysed with a focus on how well they satisfy the fundamentals of counter-insurgency warfare. Chapter Four provides a conclusion to the study and also outlines key future considerations for air power planners.

CHAPTER 1

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."[4]

Sun Tzu

Detailed knowledge of one's enemy has always been of critical importance in warfare. In counter-insurgency warfare it is even more crucial, as the enemy is not relying on overt force to achieve victory. Counter-insurgency 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.[5] Only when the underlying nature of the conflict is understood and the corresponding strategy developed can any analysis of the potential contribution of offensive air power be assessed.

Types of Insurgencies

"Counter-insurgency" 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.[6] 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?

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[4] Sun Tzu, *The Art of War*, ed. and trans. Samuel B. Griffith (London: Oxford University Press, 1971), 62.

[5] James S. Corum, "The Air Campaign of the Present and Future – Using Airpower Against Insurgents and Terrorists," in *Air Campaigns in the New World Order*, ed. Allan D. English, 25-42 (Winnipeg: Centre for Defence and Security Studies, 2005), 33.

[6] Bard E. O'Neill, *Insurgency and Terrorism: Inside Modern Revolutionary Warfare* (Dulles, Virginia: Brasseys Inc., 1990), 13.

There are four broad areas that define what insurgents fight for. These are Ideological motivators, Nationalism, Ethnic nationalism and Religion.[7] Terrorism is a unique grouping that will be looked at separately.

Ideological based insurgencies were a common occurrence during the post Second World War period, where the battle for influence between the superpowers led to them supporting regional insurgencies. Generally, the goal of ideological insurgents is entirely political. Their aim is to impose their ideologies onto the broader populace. Examples include the communist insurgencies in countries such as El Salvador and Malaya, and the anti-Marxist insurgency of the Contras in Nicaragua. These types of insurgencies are not always easily resolved as there are often strong external influences involved. The ultimate outcome will usually rest with the support of the general populace and the ability of the government to control the entire country. The outcome is likely to be more protracted and 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 externally. This was typical of the many anti-colonial conflicts throughout the Middle East and Africa during the 1920s to 1950s. Examples include Rhodesia (modern Zimbabwe), Angola, Algeria and Mozambique. These insurgencies are generally well supported by the populace and therefore they are likely to be successful.

Ethnic nationalist insurgencies often result from minority ethnic groups which find themselves under-represented or disempowered. This may be due to the nature of the political construct within the country, deliberate oppression from the ruling regime, or a legacy of the colonial era border methodology that left different cultural and ethnic groups vying for power. Modern examples exist in many regions of the world, including the Sri Lanka (Tamil Tigers), Chechnya, and the Basque region in Spain. These conflicts are often protracted and difficult to predict. A peaceful solution will not normally be found until the minorities feel they have achieved some form of self-determination. Again, the long-term outcome will usually come down to the support of the populace more than the specific political goals of the insurgents. If the ethnic minorities are satisfied with the political outcome even though the insurgents are not, the support for the insurgents will diminish and they will be unlikely to achieve their goals.

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, it can be a motivating and unifying characteristic among otherwise disparate groups with various goals and beliefs. The variety of Islamic groups that fundamentally oppose to Israel's right to exist provides a good example of this unifying affect.

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[7] James S. Corum, "The Air Campaign of the Present and Future – Using Airpower Against Insurgents and Terrorists," in *Air Campaigns in the New World Order*, ed. Allan D. English, 25-42 (Winnipeg: Centre for Defence and Security Studies, 2005), 27.

Many insurgencies do not fall neatly into a single category. There may be one or more sources of motivation behind each insurgency. For example, the Algerians which fought against France were motivated by a combination of nationalism and religion, while most of the African insurgencies were motivated by nationalism and Marxist ideology.[8] Different sources of insurgent motivation complicate the counter-insurgency campaign. The relative strengths and vulnerabilities of each motivational factor need to be understood to develop an effective counter-insurgency 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.[9] 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. This is evident with groups such as the Tamil Tigers and Chechens. Although both are inherently political organisations fighting ethnic minority counter-insurgencies, they are considered terrorist organisations by the Sri Lankan and Russian governments. Similarly, the IRA was widely known as a terrorist organisation due to the methods of warfare it used even though it was predominately fighting to achieve a political end-state. When trying to understand the fundamental nature of these groups it is important to understand the distinction between the motivations of an insurgent 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 to simply undermine Western hegemony, influence and culture through acts of terrorism.[10] The lack of a defined objective makes it difficult to adopt a coherent strategy with which to combat them.

The lack of a meaningful end-state 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 which prohibits regular large scale attacks. In effect, this means

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[8] James S. Corum, "The Air Campaign of the Present and Future – Using Airpower Against Insurgents and Terrorists," in *Air Campaigns in the New World Order*, ed. Allan D. English, 25-42 (Winnipeg: Centre for Defence and Security Studies, 2005), 27.

[9] Bard E. O'Neill, *Insurgency and Terrorism: Inside Modern Revolutionary Warfare* (Dulles, Virginia: Brasseys Inc., 1990), 27.

[10] James S. Corum, "The Air Campaign of the Present and Future – Using Airpower Against Insurgents and Terrorists," in *Air Campaigns in the New World Order*, ed. Allan D. English, 25-42 (Winnipeg: Centre for Defence and Security Studies, 2005), 27.

trying to reduce the violence to a level where it has minimal effect. 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 be able to eliminate the threat completely. A recent study into US responses to terrorism found that, "counter-terrorist military attacks against elusive terrorists may serve only to radicalize large sectors of the (Muslim) population and damage the US image worldwide."[11] Heavy handed and ill-conceived actions and reprisals are likely to provide increasing sympathy for the terrorists' cause.

The Hearts and Minds Campaign

The methods of insurgency are born from the fact that insurgent leaders are aware that they are unable to overthrow the government, either politically or through the use of direct force. This drives them to use insurgent warfare to achieve their political goals. The methods of insurgency involve eroding the strength, will or legitimacy of the government over a long period of time. The insurgents' military objective is to gradually destroy the incumbent government's manpower and equipment, thus reinforcing the government's inability to control the situation. The aim is for the government and the people to grow weary of the struggle thus forcing a favourable negotiated set of conditions for the insurgents.[12] The insurgency war is widely acknowledged to be a "hearts and minds" campaign, a concept acknowledged by Lt General Sir Gerald Templar when conducting the successful Malayan counter-insurgency; "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."[13]

The concept of "Centre of Gravity" is one that can be helpful in understanding the nature of the counter-insurgency campaign. The Centre of Gravity is essentially the heart of the problem, the source from which all protagonists derive their freedom of action, fundamental strength, and will to fight.[14] The previous analysis demonstrated that the Centre of Gravity for counter-insurgency operations revolves around the hearts and minds campaign. 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

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[11] Christopher Bolkcom and Kenneth Katzman, *Military Aviation: Issues and Options for Comparing Terrorism and Counterinsurgency* (United States Congress: Congressional Research Service, 2006), 5.

[12] Bard E. O'Neill, *Insurgency and Terrorism: Inside Modern Revolutionary Warfare* (Dulles, Virginia: Brasseys Inc., 1990), 70.

[13] Dr. Rod Thornton, *Historical Origins of the British Army's Counter-insurgency and Counter-terrorism Techniques* (Geneva: Geneva Centre for the Democratic Control of the Armed Forces, 2006), 9.

[14] Australia, Department of Defence, ADDP 5.01 *Joint Planning* (Canberra: Australian Defence Force Doctrine Publication, 2003), 1-6.

support of these people, but the Centre of Gravity is slightly different. US counter-insurgency theorist Max Mainwaring put it best when he described this Centre of Gravity as being the credibility of the incumbent government.[15] Understanding these Centres of Gravity provides an insight into how the respective campaigns are likely to be conducted. 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 developing their own legitimacy. Simultaneously the insurgents will be trying to rally support for their own 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.[16] 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 the government has been 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. Hezbollah's social services wing was able to spend US $500 000 per day helping approximately 155 000 people who had been displaced during the fighting.[17] Many international aid agencies were ineffective in Beirut because of security restrictions or because their own governments barred them from working alongside Hezbollah. Hezbollah became the sole provider for many of Beirut's residents. Developing Hezbollah's humanitarian image was a crucial component of its strategy to increase support among the local population.[18]

Operations by the Taliban in Afghanistan use more than one approach to build support. The ideological foundations of their cause are strongly promoted, but the Taliban also aim to provide security and stability to the local populace. In this way even people who do not support the strict religious and ideological principles of the Taliban are attracted by the prospect of living in a more secure environment. This makes them more likely to be sympathetic or neutral to the Taliban's cause.

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[15] Thomas Keaney, "Air Campaigns: Current Practice and Future Trends," in *Air Campaigns in the New World Order*, ed. Allan D. English, 25-42 (Winnipeg: Centre for Defence and Security Studies, 2005), 18.

[16] Australia, Department of Defence, ADDP 3.13 *Information Operations* (Canberra: Australian Defence Force Doctrine Publication, 2003).

[17] NGO Watch. "Hezbollah Relief Centres Well Run: UN: $500 000 U.S. Spent Daily on Food, Shelter," August 8, 2006; http://www.ngowatch.org/articles.php?id=404; Internet; accessed February 25, 2007.

[18] *Ibid*.

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 any action taken by the government, including offensive action, will be subject to manipulation to reinforce the righteousness of the insurgents' cause. Insurgents have even resorted to shows of force or terrorist attacks to deliberately encourage a disproportionate response from the government. This occurred during the 1970s and 1980s in Bangladesh and El Salvador, where violent government responses to insurgent attacks ultimately led to an increase in popular support for the insurgents' cause.[19] From a strategic perspective, this means that every response to the insurgents must be considered for its potential to diminish the popular support of the incumbent power.

EXTERNAL GOVERNMENT SUPPORT

Besides the "direct" form of counter-insurgency warfare where there is an incumbent power or government directly combating an insurgent organisation, there are also counter-insurgency campaigns where either the insurgents or the incumbent government are being supported externally. This paper will focus only on external governments which actively support the incumbent government.

By bringing a third actor into play within the counter-insurgency context, namely an external government which is supporting the incumbent government, the dynamics of the counter-insurgency 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. Modern examples of such external support include the current conflicts in Iraq and Afghanistan. Both of these countries have fragile incumbent governments being supported externally by Western governments.

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 conflict 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 functions of government to take place. Once a suitable level of security is obtained in an area, the scope of other non-military activities such as reconstruction of infrastructure, economic growth, and the building of incumbent security capability 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.

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[19] Bard E. O'Neill, *Insurgency and Terrorism: Inside Modern Revolutionary Warfare* (Dulles, Virginia: Brasseys Inc., 1990), 80.

External Government Centre of Gravity

An external government which is providing support for a counter-insurgency 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 policy makers and their public generally want short conflicts with clear success criteria, definitive exit strategies, and decisive victories.[20] Such pressure has been acknowledged by the current US Commander in Iraq, General David Petraeus. He has warned that if the insurgency is not defeated within six months the already waning political will and public support for the war will evaporate, leading to a Vietnam-like withdrawal.[21] The characteristics of modern Western democracies are largely incompatible with the fundamentals of counter-insurgency warfare given that campaigns tend to be of long duration, decisive victories may be elusive, measurement of progress is difficult to quantify, and often there is no definitive victory. Therefore, from the outset, Western governments involved in counter-insurgency campaigns must do all they can to maintain their own public's support.

The Role of the Media

In modern democracies the media makes the task of maintaining support for a long counter-insurgency campaign more difficult. 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. Success in a counter-insurgency campaign is difficult to define and measure. Conversely, the cost in dollars, equipment and lives is clear. The combination of these two factors result in increased criticism of the supporting 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. Conversely, any negative effects resulting from military operations such as inadvertent damage to buildings or people (defined as collateral damage), incorrect targeting, loss of major capital equipment or lives, or even incidents of

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[20] Michael Clarke, "Airpower and Military Intervention: The Political Limitations," in *Air Power 21: Challenges for the New Century*, ed. Peter W. Gray, 1-22 (London: The Stationery Office, 2000), 19.

[21] Editorial, *Globe and Mail*, March 3, 2007.

inappropriate behaviour will receive wide coverage in the media.[22] This has been evident in the Canadian media coverage of Afghanistan. A study done by the Canadian Journalism Foundation shows that the majority of Canadians believe that the combat elements are more readily reported than the reconstruction elements because they are more "exciting."[23] When the media portrays such sensational events the resulting images may have a profound affect on the support for the campaign. This was well demonstrated in Somalia where the footage of US airmen being dragged through the streets of Mogadishu has been widely acknowledged as the catalyst which ultimately ended the operation.[24]

The external government and its military need to be aware of these media realities. Regardless of the ability to mitigate the situation through public relations strategies, the fundamental nature of the media will remain. This means that for a long counter-insurgency campaign maintaining public support will be difficult. It also highlights that in counter-insurgency 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

Whilst public support for protracted counter-insurgency warfare is difficult but fundamentally important to maintain, governments can also be under pressure from the public and the media to "do something."[25] This is where air power can be seen by governments as an attractive option. Superficially, air power provides a relatively low risk, high visibility response option. An example of such a response occurred during the 2006 conflict between Hezbollah and Israel. After the kidnapping of Israeli soldiers, the government and the new Prime Minister were under pressure for a response. The initial action was an air campaign trying to stop Hezbollah rockets from being launched against Israel. The Israeli Air Force flew over 8700 sorties and struck more than 4600 targets. Despite hitting ninety rocket launchers and targeting leadership and resupply routes, the

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[22] David Gates, "Airpower: The Instrument of Choice?" in *Air Power 21: Challenges for the New Century*, ed. Peter W. Gray, 23-39 (London: The Stationery Office, 2000), 34.

[23] Canadian Journalism Federation, "Canadian's Assess the Canadian Media and its Coverage of the Afghanistan Mission," December 6, 2006; http://www.newswire.ca/en/releases/archive/December2006/06/c4592.html; Internet; Accessed January 15, 2007.

[24] Michael Clarke, "Airpower and Military Intervention: The Political Limitations," in *Air Power 21: Challenges for the New Century*, ed. Peter W. Gray, 1-22 (London: The Stationery Office, 2000), 10.

[25] *Ibid*.

air campaign was ultimately unsuccessful.[26] Ground forces also entered into the conflict as it developed, with limited success at best. The end-state was undeniable – Hezbollah was still able to launch rocket attacks on Israel and its once flagging support among the populace had been renewed. The quest for political expediency ultimately resulted in a situation which left Israel less strategically secure and damaged their long term efforts against Hezbollah.

Air power also 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. Despite this initial operational success, US and Coalition forces are still in Afghanistan with no evidence of a near term victory in sight. The lesson for politicians and planners is that even if the initial response from air power might be effective from a public opinion perspective, it is unlikely that air power alone can achieve any long-term success.

It is difficult for external governments to maintain the support required to be successful in a counter-insurgency campaign. The Centre of Gravity, support from the home population, is vulnerable in a number of areas. The length of the campaign makes 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 for counter-insurgency conflicts. External governments must understand this before committing forces in support of a counter-insurgency campaign. Likewise, military planners must also be aware of these factors when designing their campaign strategy.

DEVELOPING EFFECTIVE STRATEGY

The analysis of the fundamentals of insurgencies highlights some general principles which may be applied to developing an effective counter-insurgency strategy. It has been demonstrated that for counter-insurgency operations, there are often three distinct parties. There is 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. The hearts and minds campaign will also be critical as it is of central importance to all sides. An understanding of these key components and how they interplay will be the foundation of any effective counter-insurgency strategy, and therefore will be fundamental to the role that offensive air power can play in the conflict.

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[26] Robert S Dudney, "The Air War over Hezbollah," *Air Force Magazine* 89, no. 9 (September 2006): 2.

Understanding the Enemy

Understanding an insurgency should not be thought of in strictly military terms of knowing the enemy's order of battle, tactics and numbers. An understanding of the fundamental nature of the insurgency is required. Thorough knowledge of an adversary's machinations, motivations, methods, goals, strengths and weaknesses will be key to ultimately determining an effective counter-insurgent strategy. Although four broad categories from which insurgencies are generated have been identified, an insurgency can involve a mixture of groups with different motivations. Similarly, there may be a variation in the motivations among different supporting nations. A good example of the potential complexities involved is the insurgency situation present in Iraq. The main insurgent groups involved are the Sunnis who want to regain their political power base, the Shiites who after many years of oppression want to ensure they maintain power, and the Kurds who want some form of long-term regional autonomy. Within these groups are many sub-groups and factions which are driven by different combinations of factors again. Some are trying to promote an Islamic State, some are pseudo-criminal groups vying for a power base, and others are Islamic fundamentalists driven by a desire to inflict casualties on the United States. Complicating the situation further are the regional and international influences of Iran and Syria on the Shia and Sunni sides respectively. Saudi Arabia and the other Gulf states have interests based on political, security and religious agendas. The United States also has security concerns, domestic and international political factors and long-term strategic outcomes linked to the future of Iraq.

Clearly, such a complex inter-dependent 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. The strategy may involve a coherent approach, or may involve separating and isolating each constituent component from its support network for individual prosecution. Although the strategic end-state may be readily identifiable in each case, the ways and means of achieving it can only be determined through a complete understanding of the insurgent environment.

Understanding Incumbent and Supporting Nations

A thorough understanding of the insurgent environment will also require an analysis of the incumbent and supporting governments. The vulnerabilities, strengths and weaknesses of the incumbent government must be clearly understood. The risks to the incumbent government of employing force at various levels across a broad range of environments need to be known. This knowledge will enable the strategy to be built on the incumbent government's strengths while protecting its weaknesses.

Similarly the capabilities, limitations and vulnerabilities of any external supporting nation need to be analysed and understood so that a coherent strategy can be developed. As counter-insurgency campaigns are generally long-term endeavours, the

broad spectrum approach involving military and non-military means needs to be carefully 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 for how resilient it will be to poorly applied force, loss of men and materiel, and progress which is difficult to quantify. Realistic expectations can then 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 enables an acceptable level of risk to be determined – balancing the need to achieve military objectives against the risks of destabilising the long-term strategy.

The Importance of the Hearts and Minds Factor

The hearts and minds aspect of the campaign is centrally important to all participating groups and it is therefore essential that it becomes the focal point of strategy development. Understanding 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. This factor also has implications for external governments supporting the campaign. If the external government support is excessive or isolates the incumbent government it is likely to do long-term harm. The external support can inadvertently reinforce to the local populace that their government is ineffective. Therefore any strategy that is employed must be undertaken as much as possible with the involvement of the incumbent government so that their competence is reinforced.

The strategy for winning hearts and minds will often be non-military in focus. Many other operations providing improvements to the quality of life of the local population will be necessary. Military support will be focused on providing the secure conditions required for these improvements to occur. Military and non-military operations need to be well coordinated and part of a common strategy. The military also needs to be cognitive 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. This serves to counter any insurgent IO campaign and can also mitigate the impact of military operations on the local population. Locals are 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 reasonably. Aggressively pursuing military objectives without understanding the possible impact on local support may be fatal to the campaign.

This chapter has demonstrated that understanding the fundamentals of counter-insurgency warfare is critical to developing an effective strategy. This strategy can only be formed after a rigorous analysis of the main parties to the conflict. Their motivations, goals, strengths, weaknesses and vulnerabilities will all be important components of this analysis. Understanding how the hearts and minds factor relates to each of them and their respective Centres of Gravity will be particularly important in strategy development. The

military strategy must be coordinated closely with this broader strategy such that it maximises its strengths, minimises its weaknesses and protects its vulnerabilities.

The analysis of insurgency fundamentals leads to three main principles which need to be considered by militaries when employing force during a counter-insurgency 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 strategic effects on the campaign. These effects can be mitigated by an effective and well coordinated IO campaign. Finally, and most importantly for offensive air power, when force is required the minimum force possible should be used.

CHAPTER 2

THE APPLICATION OF AIR POWER IN COUNTER-INSURGENCY WARFARE

Air power has a role to play in modern counter-insurgency warfare, but it 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 decisive points deep behind the enemies 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 counter-insurgency campaigns.[27] Many of air power's greatest strengths cannot be employed in counter-insurgency warfare. In fact, some of the traditional functions of air power can be counter-productive. Thus there is a need to examine what air power can and cannot do in counter-insurgency warfare. To maximise its effectiveness in counter-insurgency warfare, air power's capabilities and limitations must be determined and clearly understood.

Support and Supplementation of Incumbent Forces

The analysis of the fundamentals of insurgencies in Chapter One determined that one of the best ways of using air power is to provide low profile long-term assistance to the incumbent government's air force. This complements the incumbent government's own force in the short-term with the aim of optimising its counter-insurgency warfare capability. The assistance also allows the incumbent government to develop its own independent counter-insurgency capability over the longer term. The supplementation and development of the incumbent government's air power aligns well with counter-insurgency warfare theory. Importantly, the incumbent government is taking the lead in the operation. This reinforces 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. Additionally, by providing such a relatively low risk commitment, 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 counter-insurgency support using offensive air power. The US provided equipment in the form of aircraft such as the A-37 Dragonfly and personnel to provide

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[27] Kenneth Beebe, "The Air Force's Missing Doctrine: How the US Air Force Ignores Counterinsurgency," *Air and Space Power Journal* 20, no. 1 (Spring 2006): 29.

training and military advice.[28] 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.[29] 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 Salvadorian Air Force (FAS) became credible and effective with a genuine counter-insurgency capability. The air campaign contributed considerably to the success by forcing the insurgents to avoid operating in large formations.[30] The counter-insurgency campaign concluded with the signing of a peace accord in 1992, and the support provided to the FAS by the US contributed significantly to this success.[31]

Despite the success of such support operations over the years, the US has only periodically undertaken this role. A dedicated support unit has been routinely used and disbanded between three main operating periods. The unit began by supporting British guerrilla operations in Borneo during the Second World War. Its activities peaked during Cold War operations in the Middle-East, Africa and Vietnam before being closed down. It was revived to tackle insurgencies in Central and Latin America before being closed once again. The current incarnation of the unit, 6th Special Operations Squadron, was only re-established in 1994.[32] Recognising the value of such a capability, the USAF has expanded its role since 2001 and it is continuing to grow.[33] The recognition of the value of a supporting strategy is now reflected in the US counter-insurgency 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."[34]

Although indirect support of air power capability has many benefits in counter-insurgency 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; such an approach in the current environments in Iraq and Afghanistan is impossible.

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[28] Vance C Bateman, "The Role of Tactical Airpower in Low Intensity Conflict," *Airpower Journal* 5, no. 1 (Spring 1991): 77-78.

[29] Adam Grissom, William Rosenau, and Alan J. Vick, *Airpower in the New Counterinsurgency Era* (Santa Monica, California: RAND, 2006), 71.

[30] James S. Corum and Wray R. Johnson, *Airpower in Small Wars* (Lawrence, Kansas: University Press of Kansas, 2003), 336.

[31] *Ibid*., 339.

[32] Adam Grissom, William Rosenau, and Alan J. Vick, *Airpower in the New Counterinsurgency Era* (Santa Monica, California: RAND, 2006), 109.

[33] *Ibid*., 117.

[34] Vance C. Bateman, "The Role of Tactical Airpower in Low Intensity Conflict," *Airpower Journal* 5, no. 1 (Spring 1991): 73.

When the incumbent government has a suitable level of capability, supporting operations should be conducted in some form. These operations satisfy many of the principles of counter-insurgency warfare by enhancing the incumbent government's Centre of Gravity while simultaneously protecting the supporting government's Centre of Gravity. Acting through the incumbent government reinforces its competency to its people and also develops its self-sufficiency. Self-sufficiency helps the external supporting government by reducing the amount of time it needs to remain engaged. Additionally, by providing relatively low cost and low risk support it is more likely the external government will avoid public pressure to withdraw from the campaign. This allows the external government to provide the long-term commitment that is necessary for success in counter-insurgency warfare.

Strategic Bombing

Strategic bombing has been one of the fundamental aspects of air power theory almost since the invention of the aeroplane.[35] Air power theorists and practitioners have long argued that air power's greatest strength is its ability to directly attack an enemy's strategic Centre of Gravity.[36] This is problematic in counter-insurgency warfare where the Centre of Gravity revolves around the popular support and legitimacy of the incumbent government. The socio-political 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.[37] This is difficult in counter-insurgency 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 physically attack. Even if the command and control system is successfully attacked, the insurgents' ability to operate is unlikely to be undermined.[38] 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 end-state requires a

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[35] Lieutenant Colonel Mark A Buckham, "Strategic Bombing: What is it, and is it Still Relevant?" in *Perspectives on Airpower: Airpower in its Wider Context*, ed. Stuart Peach, 293-326 (London: The Stationery Office, 1998), 293-310.

[36] Clayton K.S. Chun, *Aerospace Power in the Twenty-First Century* (Colorado: Air University Press, 2004), 66.

[37] John A.Warden III, *The Air Campaign* (New York: toExcell, 1998), 146.

[38] Thomas R. Searle, "Making Airpower Effective against Guerrillas," *Air and Space Power Journal* 18, no. 3 (Fall 2004): 15.

political solution; therefore their will to resist is unlikely to be affected through military action alone.

Despite its obvious limitations in counter-insurgency 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.[39] 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.[40] 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 was found to actually strengthen an enemy's will to resist.[41] 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 Afghanis were driven into Pakistan, the Mujahideen's morale and level of support was not severely affected.[42]

For a government providing external support to a counter-insurgency campaign, strategic bombing seems an attractive option. It appears to satisfy the requirement to do something by providing a quick and high visibility response. It is also a low risk commitment with relatively low costs involved and minimum exposure to loss of life or equipment. These factors make strategic bombing a popular choice with politicians. Similarly, the strategic nature of air power is likely to also resonate with airmen and air planners, where it has continuously dominated both air force thinking and doctrine.[43] Despite this, historical evidence does not support strategic bombing as an effective tool against insurgents.[44] While 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

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[39] James S. Corum, "The Air Campaign of the Present and Future – Using Airpower Against Insurgents and Terrorists," in *Air Campaigns in the New World Order*, ed. Allan D. English, 25-42 (Winnipeg: Centre for Defence and Security Studies, 2005), 29.

[40] *Ibid*.

[41] James S. Corum and Wray R. Johnson, *Airpower in Small Wars* (Lawrence, Kansas: University Press of Kansas, 2003), 84.

[42] *Ibid*., 396.

[43] Dennis M. Drew, "US Airpower Theory and the Insurgency Challenge: A Short Journey to Confusion," *The Journal of Military History* 62, no. 4 (October 1998): 809-833.

[44] Michael Clarke, "Airpower and Military Intervention: The Political Limitations," in *Air Power 21: Challenges for the New Century*, ed. Peter W. Gray, 1-22 (London: The Stationery Office, 2000), 16.

bombing has many risks. Even if not used overtly for punitive purposes, strategic targeting of infrastructure can make the perpetrators appear like heavy handed bullies. This may generate sympathy for the insurgent cause while simultaneously undermining the aggressor's support both at home and within the theatre of operations. For any counter-insurgency campaign, these effects may prove at best detrimental, or 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.[45] Insurgents faced with superior firepower will generally adapt by avoiding overt concentrations of force. They will tend to melt away into the local populace when threatened, creating challenges in prosecuting them.[46] Depending upon how it is applied, interdiction can have both positive and negative effects on the larger counter-insurgency campaign.

The effectiveness of interdiction will vary within each theatre depending on many factors including the type of insurgency present and the suitability of the operating environment. Factors such as the weather, terrain and weapons available can markedly influence the effectiveness of an interdiction campaign. The jungles of Vietnam and the mountains of Afghanistan have provided protection for insurgent forces and restricted the ability of air power to interdict operations. When air power is able to be applied in suitable conditions and with an understanding of the counter-insurgency fundamentals, interdiction can be very effective. Conversely, conducting interdiction operations in the wrong circumstances can severely undermine the counter-insurgency campaign. The advantages and risks of using interdiction in counter-insurgency campaigns are analysed below.

Interdiction – Advantages

The presence of air power with the ability to conduct interdiction within a theatre of operations provides significant advantages, both direct and indirect. Air power has the ability to cover large distances quickly and can have devastating effects on how insurgents can operate and employ combat power. In suitable conditions any attempt by

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[45] Australia, Department of Defence, AAP 1000 *Fundamentals of Australian Aerospace Power* (Canberra: Royal Australian Air Force Aerospace Centre, 2002), 180.

[46] Dennis M. Drew, "US Airpower Theory and the Insurgency Challenge: A Short Journey to Confusion," *The Journal of Military History* 62, no. 4 (October 1998): 810.

the insurgents to use massed force can be dealt with effectively by air power.[47] 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.[48]

In addition to the first order effects of interdiction, where the enemy is directly destroyed on the ground, there are also second and third order effects to consider. The ability of interdiction to hit the enemy whenever and wherever he concentrates manpower, equipment or resources forces an adaptation of tactics. To escape the threat from the air, insurgents must avoid large concentrations which can be easily interdicted. Consequently, their freedom of movement and ability to concentrate firepower are more limited. A resultant positive effect is that the counter-insurgents are also able to distribute their forces in a less concentrated manner throughout the area of operations. This distribution of force enables incumbent government control to be spread to areas which may have previously been inaccessible due to insurgent activity. Once this control is established the non-military functions critical to ultimate success of the campaign, such as rebuilding the infrastructure, economy and standard of living, can be carried out.

A government which is supporting the counter-insurgency 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 is no longer 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 and strain which would be associated with deploying and sustaining a much larger force. The lower commitment in troops and materiel also serves to reduce the extent to which the supporting campaign is vulnerable to criticism from the media regarding its drain on funding and resources.

Lastly, and perhaps most importantly, a smaller footprint of external military forces on the ground works toward aiding the key perception that the incumbent government forces are in control. The incumbent forces do not need many of the heavy weapons capabilities which would be required against a more concentrated and heavily armed insurgent force. This enables them 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 counter-insurgency campaign.

Interdiction – Risks

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[47] Adam Grissom, William Rosenau, and Alan J. Vick, *Airpower in the New Counterinsurgency Era* (Santa Monica, California: RAND, 2006), 113.

[48] Mark Clodfelter, "Airpower versus Asymmetric Enemies: A Framework for Evaluating Effectiveness," *Air and Space Power Journal* 16, no. 3 (Fall 2002): 45.

Faced with the superior and far reaching power of air interdiction, insurgents adapt by reducing the amount of lucrative targets available and by blending themselves into the local population.[49] In these instances interdiction missions may not easily be accomplished; any use of air power for interdiction may in fact have a negative influence on the campaign.

The logistical framework in an insurgency is usually fundamentally different to that found in conventional warfare. Conventional warfare involves lines of communication travelling in the same direction as fielded forces. The areas behind the lines contain the lucrative target sets which are vulnerable to airborne interdiction. However, embedded insurgencies often draw their sustenance from the local people, thus their logistical lines of communication do not exist in a manner which allows for interdiction from the air.[50] Any attempt to target dual use lines of communication such as bridges, roads and communications may actually be counter-productive. 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 punished, may be detrimental to overall counter-insurgency campaign. These negative effects occurred during Israel's 2006 campaign against Hezbollah. Israel targeted bridges, airports and highways with two aims. The first aim was to cut the supply of weapons to Hezbollah from Syria and Iran, effectively isolating Hezbollah from their external support. The second aim was to persuade Lebanon's large Christian and Sunni population to turn against Hezbollah.[51] Not only did it fail in its aims on both accounts, Hezbollah actually gained support. Also, international support for Israel's actions among key Arab states such as Saudi Arabia was lost.[52]

Imprecise targeting of insurgents in urban areas can also undermine the support for the campaign among both the local population being attacked and the home population of the nation conducting the attacks. This was seen during the second Chechen War between 1999 and 2002 where the Russians conducted many interdiction missions using imprecise bombing techniques. The resulting loss of civilian lives and damage to civilian infrastructure led to a drop in Russian support from both the Chechen and Russian public.[53]

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[49] Dennis M. Drew, "US Airpower Theory and the Insurgency Challenge: A Short Journey to Confusion," *The Journal of Military History* 62, no. 4 (October 1998): 810.

[50] *Ibid*.

[51] Seymour M. Hersh, "Watching Lebanon," *The New Yorker*, August 21, 2006; http://www.newyorker.com/fact/content/articles/060821fa_fact; Internet; accessed January 26, 2007.

[52] *Ibid*.

[53] Marcel De Haas, *The Use of Russian Airpower in the Second Chechen War* (Surrey: Conflict Studies Research Centre, 2003), 59.

Insurgent groups further adapt to the air threat by deliberately making airborne targeting more difficult and dangerous. Their use of camouflage, concealment and deception is increasing in its level of sophistication and innovation.[54] Man-portable threats with adapted tactics are making the operating environment more dangerous and limiting to counter-insurgency air power.[55] Insurgents may also actively encourage air power to cause unintentional damage which can be exploited through the insurgents' IO campaign.[56] These insurgent strategies are effective in a number of ways. Increasing the difficulty of locating valid targets makes offensive air power less effective. Increasing the risk of platform loss or causing collateral damage forces counter-insurgency air power to adapt. The threat of platform loss or collateral damage can be reduced by imposing restrictions on operations, although these restrictions are likely to result in reduced effectiveness. If the increased likelihood of platform loss or collateral damage is not addressed by such restrictions, the Centre of Gravity for the both the incumbent and external governments will be placed at risk. Killing innocent people and destroying infrastructure 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.

Ultimately interdiction is a viable role within counter-insurgency 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 never be able to achieve a decisive result in itself, but does deny the insurgents the ability to move freely and use force en masse. Interdiction must be conducted according to the fundamental principles of counter-insurgency warfare. Suitable targets must be carefully determined and engaged with the minimum force required to achieve the desired effect. This minimum force may include non-lethal and non-destructive means; a preferable option in counter-insurgency warfare. When deadly force is employed it must be delivered precisely and with due consideration of the risks associated with its use. Poorly applied force may achieve a tactical objective but it seriously undermines the fundamentals required for strategic success.

Close Air Support

It is difficult to provide effective fire support to a large number of dispersed troops. Conventional warfare has traditionally relied on artillery to provide rapid fire support to ground troops. Within a conventional warfare construct of definitive forward lines, massed troop concentrations and an identifiable enemy, this is one of the cornerstones of combined arms warfare. Counter-insurgency warfare, however, does not

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[54] Christopher J. Bowie, *Destroying Mobile Ground Targets in an Anti-Access Environment* (Washington DC: Northrop Grumman Analysis Centre, 2001), 3.

[55] Byron Reynolds, *Postmodern Tactical Air Intelligence* (Canberra: Air Power Development Centre, 2006), 63.

[56] *Ibid*.

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 beyond the protection of artillery. In this situation Close Air Support (CAS) can provide a highly effective means of supporting ground forces conducting counter-insurgency warfare.

CAS has become a more prominent air power role among Western air forces in recent years. For example, in an effort to increase its agility the US Army has become more reliant on CAS to provide firepower, a trend that is likely to continue into the future.[57] More than simply operating as airborne artillery, air power is able to provide precision effects throughout the battlespace in a responsive manner, thus making it well suited to counter-insurgency 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 counter-insurgency 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. Battle locations can be selected, target areas can be analysed and robust communications procedures can be put in place prior to any action. Weapons can be matched to expected targets, Rules of Engagement (ROE) can be optimised and air power assets can be coordinated to cover a broad range of options. Such preparations enable offensive operations to be conducted with maximum effectiveness and efficiency while reducing the likelihood of an adverse outcome. This was evident during the successful Battle of Fallujah conducted during November 2004. Detailed planning commenced in mid-2004 with the coordinates of many known and expected targets being determined to allow for precision engagement during the battle.[58] US Army and Marine Corps Forward Air Control teams were supplemented by twenty-eight USAF ground controllers allowing for a high degree of interoperability with ground forces. Large numbers of aircraft were allocated to the operation allowing a continuous presence over the battlefield. From the US perspective, it was one of the most successful offensive joint operations of the war.[59] Offensive CAS's greatest strength within counter-insurgency warfare is that it allows time for thorough planning 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. Targeting and its multiple effects can be thoroughly evaluated and the right procedures and people can be put in place to reduce the risk of any unwanted outcomes.

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[57] Rebecca Grant, "Bombs on Target," *Air Force Magazine* 88, no. 8 (August 2005): 69.

[58] Tim Ripley, "Close Air Support in the Twenty-First Century," *Air International* 70, no. 4 (October 2006): 22.

[59] Tim Ripley, "Close Air Support in the Twenty-First Century," *Air International* 70, no. 4 (October 2006): 22.

Defensive CAS differs from Offensive CAS because it occurs unexpectedly. The small sizes of ground troop patrols deployed in counter-insurgency 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 rapidly respond with precision effects reduces the likelihood of friendly losses as well as enabling the friendly ground forces to either neutralise or defeat the enemy attack. However compared to Offensive CAS, Defensive CAS holds significantly more risk. This risk is evident in two main areas – the risk that the job will not get done, known as operational risk, and the risk to the broader counter-insurgency campaign if errors are made during execution.

The operational risk results from the fact that unplanned force application is more difficult. Aircraft cannot be concentrated over the desired location because the objective is not known in advance. Therefore aircraft have to be on alert throughout the battlespace so that they can respond quickly when required. This creates a very asset intensive process where many aircraft must be airborne throughout the battlespace to provide a timely response. Because there are only finite air assets in most theatres, it is unlikely that there will be enough air support available in the right place and at the right time.

The increased risk of errors occurring during Defensive CAS operations results from the fact Defensive CAS cannot be thoroughly pre-planned. As targets cannot be forecast, planners are unable to assess potential weapons effects and collateral damage risks and specific procedures cannot be tailored to the operating environment. It is also more difficult for aircrew and ground controllers because unlike Offensive CAS, they are unable to pre-study and prepare for known target areas. All of this places more pressure on the human element and therefore increases the risk of mistakes being made. Unclear communications, a breakdown of procedures, or simply just a more complex operating environment can increase the chance of bombing the wrong target, causing excessive collateral damage, or even bombing friendlies. All of these occurrences are likely to have magnifying effects which will undermine the counter-insurgency campaign at the strategic level.

Overall, CAS is a fundamentally important air power role in counter-insurgency warfare. The ability to provide rapid precision effects throughout the battlespace allows ground forces more freedom to operate in the dispersed manner which is desirable in counter-insurgency warfare. The ability to have aircrew in the targeting loop also means that there is a greater ability to deliver precise ordnance on the correct target. The unique view of the battlespace from the air and the ability to provide an independent visual verification of the target provides advantages over artillery for counter-insurgency warfare. However, CAS is not without its risks; Defensive CAS in particular. These risks may be mitigated by having robust training, procedures and ROE. More so for CAS than other air power roles, good judgement and sound decision making will be essential at the tactical level. Time is critical, information is often limited, and decisions have to be made at the lowest levels. Good judgement and decision making can only be achieved if the fundamental concepts of counter-insurgency warfare are understood by the aircrew and ground troops who ultimately apply deadly force. By understanding the benefits and risks associated with employing force in a counter-insurgency campaign those at the tactical

level are more likely to make decisions that will meet the objectives of the broader campaign.

Targeted Killing

Due to air power's ability to project lethal force over long distances, it has been used to target individual leaders of insurgent or terrorist groups in what has become known as "targeted killing". Within certain types of counter-insurgencies, where the group relies extensively on one or a number of key individuals to operate, conducting targeted killing is an attractive option. There are, however, a number of factors which need to be thoroughly 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 a kinetic response is the most appropriate. The risk of collateral damage and what effect it may have on the broader campaign must also be clearly understood.

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.[60] Consideration must also be given to whether killing 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 for more secretive organisations such as global terrorist networks. For these secretive and difficult to penetrate organisations the intelligence gained from an individual is likely to be more valuable than their death.

The effects of killing an individual are difficult to predict, but consideration must be given as to whether the killing will in fact embolden the insurgency. Israel's military is one of the most experienced in conducting targeted killings, but it does not always achieve positive outcomes. In February 1992 the leader of Hezbollah was killed by an Israeli targeted air strike. Not only did the strike have no effect on Hezbollah's capabilities, it actually emboldened Hezbollah and resulted in significant retaliation.[61]

When a targeted killing produces civilian casualties the counter-insurgency campaign can be undermined. In January 2006 the US targeted a location in Pakistan they believed to be harbouring the key Al Qaeda figure Ayman al-Zawahiri. Although the strike successfully killed a number of other Al Qaeda figures including their top chemical weapons expert, al-Zawahiri was not killed. The resulting civilian casualties from the

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[60] Christopher Bolkcom and Kenneth Katzman, *Military Aviation: Issues and Options for Comparing Terrorism and Counterinsurgency* (United States Congress: Congressional Research Service, 2006), 10.

[61] *Ibid*., 14.

strike provoked a great deal of outrage and a number of days of protesting in Pakistan. Pakistan's Prime Minister condemned the strike and the US risked losing support from Pakistan, a key ally in its war on terrorism.[62]

Targeted killing is a viable role for offensive air power within a counter-insurgency campaign. The key issues are consistent with those found in other offensive air power roles. The nature of the insurgency must be understood before using force, and the risk of using force must be weighed against any effects which may be detrimental to the overall campaign. If a thorough analysis has taken place, intelligence is reliable and the collateral damage potential is eliminated or greatly minimised, then targeted killing may be a suitable option.

Summary – Benefits and Risks

Air power offers many advantages when conducting counter-insurgency warfare due to its ability to cover large distances and react quickly with overwhelming force. It does have limitations, however, and many of the traditional roles considered to be the cornerstone of air power theory are of limited effectiveness and questionable utility in counter-insurgency warfare. Strategic bombing may be effective in isolated cases, but the small number of targets and the nature of insurgency will not make it decisive. Punitive or coercive bombing has been shown to be potentially detrimental to the long-term aims of counter-insurgency 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 counter-insurgency warfare are interdiction and CAS. Interdiction degrades the adversary's ability to command and control its forces and also makes its re-supply more difficult. Even when there are few opportunities to interdict, the mere presence of an interdiction capability in theatre has a passive positive effect. The enemy is forced to adapt by avoiding the overt movement of large numbers of men and supplies. Enemy forces can no longer mass in large numbers for long periods of time because they are vulnerable to attack from the air. The availability of CAS further enables friendly forces to be deployed in more areas throughout the theatre, thus working in support of the fundamental counter-insurgency 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. When the conditions of the insurgency allow, external supporting roles should be transitioned from direct to indirect involvement. Supporting the incumbent government with training, doctrine, intelligence, airframes and weapons helps to re-establish its credibility with its own

[62] Christopher Bolkcom and Kenneth Katzman, *Military Aviation: Issues and Options for Comparing Terrorism and Counterinsurgency* (United States Congress: Congressional Research Service, 2006), 13.

people. This creates a favourable situation for both the supporting and incumbent powers and is more likely to result in a resolution of the conflict.

As has been noted throughout this chapter, the use of offensive air power also presents many risks. The key to the campaign, the hearts and minds of the population, can be adversely affected through the poor application of offensive air power. Killing innocent people and destroying infrastructure and property are all detrimental to the ultimate outcome of the campaign. These acts work against the Centre of Gravity of both the supporting and incumbent governments and play into the insurgents' hands. They provide the insurgents with propaganda opportunities which can be exploited to affect local and international support. The killing of innocents and the destruction of property are more likely to be portrayed in the media than stories about reconstruction projects. Similarly, acts of fratricide and the loss of airframes are likely to erode the external government's support for the campaign from its own public, thus making it more difficult for them to remain committed for the length of time required to succeed.[63]

The discussion of the benefits and risks associated with using offensive air power in counter-insurgency warfare can be used to provide a framework for evaluating the tools required to practically and successfully apply offensive air power 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 counter-insurgency warfare. When evaluating the suitability of offensive air power tools in counter-insurgency warfare, the following factors should be considered:

a. Ubiquity – offensive air power must be able to operate throughout the battlespace.
b. Speed – offensive air power must be able to respond quickly to situations on the ground.
c. Firepower – offensive air power must possess the capability to destroy or neutralise potential target sets.
d. Collateral damage (unintended damage to buildings or people resulting from targeting a legitimate target) – must be minimised or eliminated.
e. Incorrect targeting (something or somebody has been incorrectly identified as a legitimate target) – must be minimised or eliminated.
f. Fratricide – risk must be minimised or eliminated.
g. Survivability – vulnerability to attack must be minimised or eliminated.

In the following chapter, these factors will be used to evaluate the suitability of various platforms, sensors and weapons for use in counter-insurgency warfare. Platforms,

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[63] Michael Clarke, "Airpower and Military Intervention: The Political Limitations," in *Air Power 21: Challenges for the New Century*, ed. Peter W. Gray, 1-22 (London: The Stationery Office, 2000), 10.

weapons and sensors are the actual interface through which offensive air power is applied, and will therefore be the focus of the evaluation. 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 will be omitted. By understanding how platforms, sensors and weapons can be applied to the counter-insurgency campaign, a more coherent and effective strategy for the employment of offensive air power can be developed.

CHAPTER 3

PLATFORMS, SENSORS AND WEAPONS IN COUNTER-INSURGENCY WARFARE

PLATFORMS

The framework for evaluating the effectiveness of offensive air power tools in counter-insurgency operations indicates that some platforms will be better suited to the counter-insurgency role than others. A caveat to this discussion is that each specific theatre will have its own unique terrain, weather and threats. Accordingly, some platforms will realise certain advantages or disadvantages due to these variables. This should be a consideration for air power planners, but a detailed breakdown for each potential theatre is beyond the scope of this paper. The following evaluation will instead consider generic strengths and weaknesses of various platform types. The considerations which are discussed below could then be tailored for specific theatres.

The platforms which are most suitable for counter-insurgency 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 incorrect targeting, fratricide and collateral damage is minimised.

Helicopters

The main advantage of helicopters is their ability to operate at low speed near the ground. This allows them to operate close to both friendly troops and potential targets. This proximity enables helicopters to maintain sensors on a target or in a target area with minimal manoeuvre or loss of contact. With less chance of visual misidentification correct targeting is more assured. Sensor capability is maximised due to closer ranges and the slow rate of movement of the platform. 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 operate more effectively with lower cloud cover and lower levels of visibility 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 vulnerable to attack from the ground. Insurgents are unlikely to have highly capable strategic surface to air missiles (SAMs), but will likely have access to some form of low-technology tactical anti-air capability. Infra-Red (IR) SAMs, such as the US Stinger and the Soviet SA-7 series, are prevalent among many of the world's insurgent groups. Even when helicopters are equipped with the latest missile approach and warning

systems (MAWS) and IR decoys, they are still susceptible 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. There have been many occurrences when helicopters have proved vulnerable to insurgent attacks. During counter-insurgency operations in Panama in the late 1980s both helicopters and fixed wing aircraft were used for CAS, but it was only the helicopters which received battle damage.[64] During strike missions supporting counter-insurgency missions in El Salvador, the El-Salvadorian Armed Forces (ESAF) reassigned helicopters to armed reconnaissance roles after sustaining heavy losses.[65] Between 1999 and 2002 during the second Chechen conflict the Russians lost over thirty-three helicopters compared to only three fixed wing aircraft.[66] The US has suffered significant helicopter losses recently in Iraq with seven helicopters being shot down between January 20 and February 7, 2007.[67] Such losses can have strategic effects on the support for the mission. This was seen in Somalia in 1993 where the loss of Black Hawk helicopters, and the subsequent treatment of the downed crews, effectively ended the US mission.[68]

On balance helicopters offer a viable offensive support platform, but their use has significant risk. Their advantages need to be weighed against the risk of platform loss and the strategic effects this may have. For situations where such losses are politically or strategically untenable, efforts should be made to achieve the same capability through more survivable platforms.

High-speed Multi-role Fighters

This section will focus on high-speed and multi-role fighters which were not specifically designed for CAS or interdiction. These types of aircraft, such as the F-15, F-16 and F-18 series, are the only types of offensive platforms many air forces have. They were generally designed for conventional warfare and therefore have certain disadvantages when used in counter-insurgency warfare.

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[64] Vance C Bateman, "The Role of Tactical Airpower in Low Intensity Conflict," *Airpower Journal* 5, no. 1 (Spring 1991): 78.

[65] *Ibid*.

[66] Marcel De Haas, *The Use of Russian Airpower in the Second Chechen War* (Surrey: Conflict Studies Research Centre, 2003), 59.

[67] New York Times, Michael R. Gordon and David S. Cloud, "Planning Seen Behind Attacks on US Copters", Feb 18, 2007.

[68] Michael Clarke, "Airpower and Military Intervention: The Political Limitations," in *Air Power 21: Challenges for the New Century*, ed. Peter W. Gray, 1-22 (London: The Stationery Office, 2000), 10.

One of the major disadvantages of high-speed multi-role aircraft is that they are expensive to operate and have a large logistical overhead. They need to operate from bases that have substantial infrastructure. Their high-technology avionics and war fighting equipment must be supported even though it cannot be utilised in a low-technology counter-insurgency campaign. High-speed multi-role aircraft are also not generally designed to have the long endurance which is desirable for counter-insurgency operations. This limitation in endurance means that a large number of these aircraft will likely be required in theatre to provide the requisite air support to ground troops. Additionally, capabilities such as air-to-air refuelling will likely be required in theatre to supplement the limited range and endurance of these aircraft. These requirements increase the level of commitment needed from externally supporting governments, placing further pressure on their ability to support the campaign for 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 altitude of shoulder-launched SAMS, generally ten to fifteen thousand feet. This reduces the ability to accurately identify targets visually from the air. Higher altitudes also reduce the capability of sensors, perhaps even rendering them ineffective if aircraft are forced to operate above significant cloud cover. During the Balkans campaign the imperative for platform preservation took precedence over the conduct of effective operations. Height restrictions above fifteen thousand feet, poor weather and restrictions designed to prevent collateral damage or fratricide severely impaired NATO's ability to provide air support.[69] Although these restraints and impositions are understandable from a strategic and political standpoint, they do highlight the limitations of this type of platform when such restrictions are in place. Even when deployed at lower altitudes, the high speed of these aircraft makes it difficult for them to visually identify and discriminate targets independently. This reduces the effectiveness of interdiction missions and there is an increased risk of attacking the wrong target. CAS missions using high-speed multi-role fighters will be highly reliant on ground forces to nominate and correctly identify ground targets. The inability to independently corroborate this information increases the risk of the wrong target being attacked. As shown earlier in the paper hitting the wrong target, or even worse hitting friendlies, has more profound strategic consequences in a counter-insurgency campaign than a conventional one. Some of the risk may be mitigated through the use of highly capable sensors, but as will be discussed later in this chapter these too have limitations. Another method of mitigating these risks is to apply 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 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

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[69] Michael Clarke, "Airpower and Military Intervention: The Political Limitations," in *Air Power 21: Challenges for the New Century*, ed. Peter W. Gray, 1-22 (London: The Stationery Office, 2000), 8.

that are effective against most SAMs. Even the latest generations SAMs have limited capability against these platforms. A further advantage these aircraft offer is that they are usually able to be fitted with a broad range of sensor and weapon suites. Such flexibility enables the platform to be optimised for operations in a counter-insurgency environment.

Conventional military fast jets are never going to be the optimum solution for projecting offensive air power in counter-insurgency warfare. Their limitations in range, endurance and supportability are not easy to overcome. However, to get sufficient numbers of aircraft to provide the ubiquity required in counter-insurgency warfare, these aircraft may be all that is available. The true capability of these platforms will be affected by the equipment they carry. Sensor suites, communications equipment, weapons, night and all weather operating ability will all affect how suitable a particular multi-role aircraft is for counter-insurgency warfare. Optimising these systems will enable more effective operations to be conducted in an environment where the risks of platform loss, collateral damage and incorrect targeting are likely to be mitigated by restrictions on operations. The specifics of sensor and weapons suitability for counter-insurgency warfare will be discussed later in the paper.

Slower Speed Air to Ground Aircraft

Aircraft which are able to operate at lower speeds close to the ground have proved highly effective in counter-insurgency operations in many theatres over many years. Their advantages are that they are cheap to operate, can be deployed with a small support infrastructure and can operate from less substantial facilities than high-technology multi-role fighter aircraft. Tactically they can operate at the low altitude and slow speeds which are better for target acquisition and identification. This improved acquisition allows them to find and prosecute targets that are difficult to detect. Robust target identification reduces the likelihood of incorrect targeting or fratricide. During the Malayan counter-insurgency campaign, the British found that the older, slower airframes offered significant advantages over faster jets. They proved so valuable during the Malayan campaign that there was considerable resistance when the British began to transition to an all jet force.[70] During the Korean and Vietnam Wars the US also found that the capabilities of piston engine aircraft were more suitable for the roles of CAS and interdiction than jets.[71]

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

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[70] James S. Corum and Wray R. Johnson, *Airpower in Small Wars* (Lawrence, Kansas: University Press of Kansas, 2003), 197.

[71] *Ibid*., 198.

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 counter-insurgency warfare roles. Currently the US is the only country which fields such a specialised capability.

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 using older, cheaper aircraft is the only alternative; one which over many years has proved to be effective. In theatres such as Rhodesia and El Salvador, simple low-technology aircraft were able to produce decisive results against insurgent forces.[72] Even when threatened by SA-7 SAMs and lacking infra-red countermeasures, aircraft such as the A-37 were successfully employed in the counter-insurgency role.[73] In Columbia, aircraft such as the OV-10 and Dragonfly have proved to be very effective counter-insurgency platforms over many years.[74] The effectiveness and affordability of such platforms has led to the Colombian government seeking similar qualities in replacement platforms, with aircraft such as the Embraer Super Tucano being considered.[75] Having such a cheap and easy to operate independent offensive air capability satisfies many of the fundamental counter-insurgency factors. The incumbent government's indigenous capability gives it more credibility with its people and also reduces the support burden placed on the external government.

Slow speed air to ground aircraft also have limitations in counter-insurgency 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 counter-insurgency warfare. Their advantages need to be balanced with their disadvantages 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 survival aircraft which can be used in counter-insurgency warfare. While they do not represent the complete solution, they are clearly able to support the fundamentals of counter-insurgency warfare in a practical and cost effective manner.

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[72] Adam Grissom, William Rosenau, and Alan J. Vick, *Airpower in the New Counterinsurgency Era* (Santa Monica, California: RAND, 2006), 112.

[73] Vance C Bateman, "The Role of Tactical Airpower in Low Intensity Conflict," *Airpower Journal* 5, no. 1 (Spring 1991): 77.

[74] James S. Corum and Wray R. Johnson, *Airpower in Small Wars* (Lawrence, Kansas: University Press of Kansas, 2003), 371.

[75] Jose Higuere, *Latin American Air Forces* (Colorado: Air University Press, 2004), 21.

Gunships

In many ways gunships such as the AC-130 Spectre seem ideally suited to counter-insurgency 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 counter-insurgency platform in a number of campaigns from Vietnam to Iraq.[76] During the insurgency in El Salvador the predecessor of the AC-130, the AC-47 gunship, proved to be a very effective weapon.[77] The combination of its accuracy, heavy firepower, long loiter time and relative ease of use made it the most effective weapon in the FAS arsenal.[78]

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 dollars.[79] 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. Even during the periods of intense need, such as during the US battle to regain control of Fallujah in Iraq, the AC-130 was not deployed during daylight hours.[80] The gunship is an extremely powerful weapon for counter-insurgency warfare and in the right environment will often be the weapon of choice. Its cost and operating restrictions, however, limit its broader application.

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[76] Adam Grissom, William Rosenau, and Alan J. Vick, *Airpower in the New Counterinsurgency Era* (Santa Monica, California: RAND, 2006), 146.

[77] James S. Corum and Wray R. Johnson, *Airpower in Small Wars* (Lawrence, Kansas: University Press of Kansas, 2003), 348.

[78] *Ibid*., 337.

[79] Christopher Bolkcom and Kenneth Katzman, *Military Aviation: Issues and Options for Comparing Terrorism and Counterinsurgency* (United States Congress: Congressional Research Service, 2006), 25.

[80] Christopher Bolkcom and Kenneth Katzman, *Military Aviation: Issues and Options for Comparing Terrorism and Counterinsurgency* (United States Congress: Congressional Research Service, 2006), 25.

Unmanned Combat Aerial Vehicles

Unmanned Combat Aerial Vehicles (UCAVs) are an emerging capability that appears to have a great future in counter-insurgency warfare. UCAVs satisfy many of the factors pertinent to counter-insurgency warfare. Without the requirement to accommodate people on board, UCAVs can remain on station for extended periods of time. They are able to carry advanced sensors, advanced communications suites and precision weaponry. The altitude and speed they operate at 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 counter-insurgency 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 Unmanned Aerial Vehicles (UAVs). These UAVs have successfully been used in support roles providing ISR inputs and directing targeting.[81] At the moment 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.[82] 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 on-board 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 have selected the Warrior as their future UCAV vehicle.[83] The Israelis have considerable experience operating UCAVs over the West Bank and Gaza strip and are continuing to increase their UCAV capability.[84] As technology advances, development continues and doctrine matures, it is likely that UCAVs will become an invaluable platform for supporting counter-insurgency warfare. The potential strategic and tactical advantages offered are immense.

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[81] Charles E. Kirkpatrick, *Joint Fires as they were meant to be: V Corps and the 4th Air Support Operations Group During Operation Iraqi Freedom* (Arlington, Virginia: The Institute for Land Warfare, 2004), 11.

[82] Christopher Bolkcom and Kenneth Katzman, *Military Aviation: Issues and Options for Comparing Terrorism and Counterinsurgency* (United States Congress: Congressional Research Service, 2006), 25.

[83] *Ibid*., 26.

[84] Alon Ben-David. "Israel deploying more armed UAVs in West Bank." Janes Defence Weekly. October 13, 2004.

SENSORS

Good sensor suites are a key requirement for the effective employment of offensive air power in counter-insurgency warfare. Correctly identifying and accurately engaging targets has always been fundamental to military operations, but its importance is even greater in counter-insurgency warfare. The negative effects of targeting innocents or friendlies 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. Support for the operation among both the local and supporting nation's population is placed at risk and the broader campaign may be adversely impacted.

A good sensor suite also helps mitigate against the risk of platform loss which, once again, may have strategic effects on the campaign. Good sensors can surpass the capability of the naked eyeball, allowing the platform to achieve a safe level of standoff from the threat. This standoff may be horizontal, as is usually the case for rotary wing assets, or vertical in the case of most fixed wing assets. With the aid of good sensors targets can be correctly identified and accurately engaged without exposing platforms to unnecessary risk.

The true capability of a sensor suite is not just dependent on the sensor itself. It will be a function of the sensor's inherent capability, the range from the area of interest or target, 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 type of ground environment present. For all of their high technology capability, electro-optical (EO) and IR sensors still require 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 (SAR), mitigate this problem to some degree. Their all weather capability is an advantage, but their utility is more limited because they cannot achieve the same level of resolution as EO or IR sensors.

Sensors can be categorised as having three levels of capability. As the capability of a sensor varies, so does its operational effectiveness and its ability to mitigate risk. At the most basic level a sensor is only able to identify the target area in question. It may not be able to directly see the desired mean point of impact (DMPI), but can identify some significant features within the target area. The platform using the sensor becomes totally reliant on an external source, whether that be ground based or airborne, to correctly identify the target and assess the risk of collateral damage or misidentification. Some degree of cross-checking is possible against large scale errors, but there is no means to independently confirm the validity of the target. Examples of such a level of capability are basic SAR, and older generation IR pods (such as the NITE Hawk pod used on F/A-18s) being operated in other than ideal conditions.

The next step up in capability involves sensors which are able to correctly locate the DMPI, but not to identify it. For example, the sensor may be able to locate a

particular vehicle, but not actually identify what type of vehicle it is. 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 type of ROE which is being used.

At the top end of the scale are sensors which have a high confidence on-board 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. Examples of such sensors include the LITENING AT pod, and the Pantera or "Sniper" pod which is being introduced into USAF service.

The suitability of a sensor for use in counter-insurgency 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, integration and risk. The lower end sensors are incapable of autonomous identification and classification of targets, making them unsuited for interdiction roles in counter-insurgency warfare. When used in CAS roles, there is a reliance on ground forces to correctly identify the target and assess the potential impact for collateral damage. This becomes problematic in Defensive CAS where ground troops may not be in a position to provide such information. The inability to independently confirm the correct target increases the risk of engaging friendlies and innocents, or causing unnecessary collateral damage. Mitigating this risk by imposing restrictions on weapon employment severely reduces the potential effectiveness of offensive air power. Conversely, the capabilities of higher grade sensors enable aircraft to operate with less risk and a higher degree of effectiveness. The ability to correctly identify a potential target means that more targets can be independently engaged with a reduced likelihood of adverse errors.

The importance of having highly capable sensors in counter-insurgency warfare has recently been emphasised by the Commander of USAF's 9th Air Force and US CENTCOM's Air Forces, Lt General Walter E Buchanan III. He has said that new generation pods such as LITENING AT and Sniper are required to meet the new threat environment. He notes that these pods can be incorporated onto legacy platforms such as the F-18, F-15 and F-16, making them much more effective. He believes that the capabilities of these pods are so good that they enable fighters to have an ISR capability on par with specialist platforms such as Predator.[85]

Sensor capability has a huge impact on how effective offensive air power can be in support of counter-insurgency 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

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[85] Marc V. Schanz, "A Complex and Changing Air War: The Top Airman in Southwest Asia Discusses Air Operations Over Iraq and Afghanistan," *Air Force Magazine* 85, no. 1 (January 2006): 68.

understood in the context of how operationally effective they are likely to be, and how much risk is associated with their use. Lower grade sensors reduce the effectiveness of offensive platforms while increasing the risk of error. Their inability to independently identify targets reduces the likelihood that a valid target will be prosecuted and also increases the likelihood that the wrong target will be attacked. Conversely, high grade sensors allow air power to be more effective, particular in the roles of interdiction and CAS where correct target identification is paramount. Most importantly, the ability of a high grade sensor to independently identify a target means that the risk of fratricide, collateral damage and incorrect targeting is greatly reduced. Ultimately, this supports the fundamentals of counter-insurgency warfare by protecting the Centre's of Gravity of both the incumbent and supporting governments.

WEAPONS

Poorly delivered, inaccurate, indiscriminate or overly damaging weapons are ill-suited for counter-insurgency warfare where their negative effects are amplified and the corresponding consequences magnified. Historically there have been a number of occasions where it has been apparent that conventional weapons and delivery systems are not well suited to counter-insurgency warfare.[86] For example, during the Malayan campaign many RAF officers recognised the need for pin-point accuracy. The use of platforms which were not designed with counter-insurgency in mind combined with World War II era high-explosive "dumb bombs" was recognised as being incompatible with counter-insurgency warfare principles. This problem was noted by an RAF officer at the time, "They were designed for full-scale modern warfare, and design features suitable for it are often quite the reverse for anti-guerrilla action."[87] This section will review different types of weapons focussing on their strengths and weaknesses in counter-insurgency warfare.

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[86] James S. Corum and Wray R. Johnson, *Airpower in Small Wars* (Lawrence, Kansas: University Press of Kansas, 2003), 197.

[87] *Ibid*.

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 (PGMs) used was less than ten percent. By the time of the Kosovo air campaign the usage had increased to above thirty-five percent, and during Iraqi Freedom in 2003 usage was at sixty-eight percent.[88] Precision weapons are almost exclusively used for counter-insurgency warfare in the modern era. General Buchanan has stated that in the CENTCOM theatre, which includes Iraq and Afghanistan, PGMs are "the name of the game" and used for almost all operations.[89] Precision weapons fall into a number of general categories, each of which have certain advantages, strengths or weaknesses specifically related to their applicability to counter-insurgency operations. Generically, precision weapons can be categorised as laser guided, command guided, Global Positioning System (GPS) guided or IR 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 physically placed on the desired target either by the aircraft's on-board 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 guide towards the laser spot until impact. Ground based lasing further reduces the chances of a misunderstanding between the ground and the air over the desired weapon impact point. The ground team can put the laser directly where they want the weapon to impact and, provided the pilot releases the weapon in the right zone, it will guide to the desired location.

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 guide to the target. Importantly for counter-insurgency warfare, these man-in-the-loop systems allow the weapon to be steered off the target if conditions for impact are not satisfied. During weapon time-of-flight the situation on the ground may change, particularly in areas where there is more risk of collateral damage. Innocent people may move into the target area, a moving vehicle which is being targeted may enter a crowded

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[88] Thomas Keaney, "Air Campaigns: Current Practice and Future Trends," in *Air Campaigns in the New World Order*, ed. Allan D. English, 25-42 (Winnipeg: Centre for Defence and Security Studies, 2005), 19.

[89] Marc V. Schanz, "A Complex and Changing Air War: The Top Airman in Southwest Asia Discusses Air Operations Over Iraq and Afghanistan," *Air Force Magazine* 85, no. 1 (January 2006): 68.

location, or there may be recognition that the target designated is in fact incorrect. In these cases the operator should be able to steer the weapon away from the intended area and into a safe location for impact, thus avoiding a potentially detrimental outcome.

The limitation of these weapons is that they require visual conditions to exist between the weapon and the target. In bad weather, such as complete under-cast or low visibility due to heavy precipitation, these systems cannot be used at all as they require visual or IR acquisition of the target. 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 a significant distance from the intended target. For urban or high collateral damage risk areas this is problematic as it is likely to harm innocents or damage their property – an act that will reduce support for the perpetrators and provide propaganda opportunities for the insurgents.

An additional limitation of laser guided weapons is the requirement to continually lase the target until weapon impact. This may expose either the delivery platform 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 counter-insurgency warfare. However, the risks of using them in marginal weather need to be understood. When the weather conditions are unsuitable for using laser guided weapons other types of weapons will be required.

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. The target still needs to be locked onto, negating its capability in adverse weather. 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 correctly identified 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. With an IR lock the weapon is able to guide directly to the intended target. Additionally, IR weapons such as the AGM-65 Maverick 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 cloud or other sources, and further enhancing the ability to achieve positive identification. As long as the intended target provides strong enough IR tracking characteristics, this class of weapon is highly suitable for counter-insurgency warfare.

GPS Weapons

GPS 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 to potentially expose either ground troops or the delivery platform to enemy fire. During the initial stages of Operation Enduring Freedom, and in particular during Operation Anaconda, GPS weapons proved to be highly effective. Coalition aircraft were able to drop large numbers of precision weapons onto Al-Qaeda and Taliban positions with small numbers of Special Forces providing target information.[90] On the first day of air strikes, October 7, 2001, more damage was done to visible targets than in Operation Allied Force and Operation Desert Storm.[91] PGM attacks, primarily with GPS weapons, achieved on average two targets per aircraft compared with the ten aircraft per target during Desert Storm.[92] 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. As has been discussed previously, this ability works positively towards the goals of counter-insurgency warfare.

Despite their obvious advantages, there are risks and drawbacks associated with the use of GPS weapons. While they can be used in all weather conditions, they do require precise target coordinates to be effective. These highly precise or mensurated coordinates can be obtained through either on-board or off-board means. If obtained on-board, then the same weather limitations which affect sensors used for laser guided weapons will still be a factor. Currently, sensor pods with the ability to provide such accurate coordinates are in limited supply. Even most high-end pods do not have this capability. Similarly, the ability to obtain mensurated off-board coordinates suitable for GPS weapons in theatre is limited. It is not simply a matter of reading a map; specialised equipment is needed to achieve the required precision. Obtaining coordinates from off-board sources also has associated risks. Firstly, without suitable weather conditions and a latest generation sensor, there is no ability to independently identify the target or assess potential collateral damage. While this may not be a factor in an open battlefield, it is more of a concern in a counter-insurgency 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

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[90] United States, United States Air Force, *Operation Anaconda: An Airpower Perspective* (Headquarters United States Air Force, February 7, 2005), 111.

[91] Rhudra Chaudhuri and Dr. Fotois Moustakis, *Counting the Cost of an American Unilaterist Policy: A Superpower at Risk?* (Swindon, United Kingdom: Conflict Studies Research Centre, 2006), 3.

[92] *Ibid*.

incidents.[93] During Operation Enduring Freedom, prior to Operation Anaconda, there were three incidents where Forward Air Controllers vectored GPS munitions onto their own positions, resulting in the deaths of three Green Berets.[94] An over-reliance on digital instruments and the failure to utilise procedural safety checks contributed to these incidents.[95] During Operation Anaconda there was a two-thousand pound JDAM (a GPS weapon) which was dropped onto the position of seventy American soldiers but failed to explode. According to USAF Colonel Michael Longoria from the joint air-ground operations office of Air Combat Command, "Anaconda would have been a terrible tragedy for the US if that two-thousand pound bomb worked...It would have been one of the top ten disasters for the US military."[96] To be effective in counter-insurgency warfare, GPS 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 PGMs it is clear that each type offers distinct advantages and disadvantages in counter-insurgency 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 PGMs 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 counter-insurgency warfare make the use of low yield weapons especially attractive. Many of the weapons being used for counter-insurgency 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

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[93] Christopher Bolkcom and Kenneth Katzman, *Military Aviation: Issues and Options for Comparing Terrorism and Counterinsurgency* (United States Congress: Congressional Research Service, 2006), 23.

[94] Joe Pappalardo, "Afghanistan taught US "Hard Lessons" in Close Air Support," *National Defense* 90, no. 251 (August 2005): 62.

[95] *Ibid*.

[96] *Ibid*., 63.

unnecessarily increasing the likelihood and magnitude of collateral damage.[97] A 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.[98] 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.[99] This is particularly pertinent given that a large proportion of counter-insurgency targeting is done in urban areas. This capability gap of suitable weapons for use in counter-insurgency and urban warfare has led to the development of the Small Diameter bomb. 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 counter-insurgency environment.[100]

Other weapons which have previously been considered out-dated for modern conventional warfare are finding new life in the counter-insurgency 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. The applicability of such weapons for counter-insurgency warfare was even documented in the 1940 US Marine Corps Small Wars Manual which emphasised the use of light bombs and machine guns over the more traditionally used heavy bombs.[101] During recent urban operations in Iraq strafing and rocket attacks were found to be highly effective.[102]

The difference between counter-insurgency and conventional warfare weapons requirements is well known in Israel as a result of their extensive experience in counter-insurgency warfare. As a senior Israeli general noted in 2004, "In the past, the more lethal something was, the more effective it was. Now, sometimes it is the exact opposite."[103] While the risk of the increased exposure of aircraft to ground threats needs to be

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[97] Tim Ripley, "Close Air Support in the Twenty-First Century," *Air International* 70, no. 4 (October 2006): 22.

[98] John A Tirpak, "Strikes in the City; High Problems of Low Numbers," *Air Force Magazine* 90, no. 2 (February 2007): 12.

[99] *Ibid*.

[100] Tim Ripley, "Close Air Support in the Twenty-First Century," *Air International* 70, no. 4 (October 2006): 24.

[101] Christopher Bolkcom and Kenneth Katzman, *Military Aviation: Issues and Options for Comparing Terrorism and Counterinsurgency* (United States Congress: Congressional Research Service, 2006), 3.

[102] Marc V. Schanz, "A Complex and Changing Air War: The Top Airman in Southwest Asia Discusses Air Operations Over Iraq and Afghanistan," *Air Force Magazine* 85, no. 1 (January 2006): 69.

[103] B.C. Kessner, "Israeli Official: Targeted Killings Matter of Perception," *Defense Daily*. September 30, 2004.

accounted for when using rockets or canon, the advantages of smaller yield weapons are clear.

Non-lethal Effects

Non-lethal 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 negatively affect the campaign. By using non-lethal means, the desired effect may still be achieved without the associated risk. For example, when a US convoy was being threatened by a hostile crowd in Baghdad in November 2004, the air response was to conduct a number of low and fast passes over the crowd with an F-15E. This dispersed the crowd and the convoy was able to proceed without incident.[104] 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.[105] This approach was again used successfully during the Iraqi elections in January 2005. Although there is little data currently available to definitively measure the success of Air Presence, the subjective feedback has been positive. A report from the 1st Infantry Division's tactical operations centre notes that, from the land forces perspective, Air Presence works. 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."[106]

Non-lethal means of achieving battlefield effects provide advantages in both flexibility, with the removal of ROE restrictions, and also risk mitigation, through removing the potential side-effects of using deadly force. Advancing technology provides opportunities to improve low yield, low collateral damage and non-lethal weaponry. Continued development and use of such weapons should allow offensive air power to contribute more positively to counter-insurgency campaigns by providing solutions which achieve the tactical aims of the battlefield without compromising the strategic fundamentals of the campaign.

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[104] Colonel Howard D. Belote, "Counter-Insurgency Air Power: Air-Ground Integration for the Long War," *Air and Space Power Journal* 20, no. 3 (Fall 2006): 58.

[105] *Ibid*., 59.

[106] *Ibid*.

CHAPTER 4
CONCLUSION

The counter-insurgency warfare environment poses many challenges for offensive air power. The ways and means by which offensive air power can be employed should only be determined from a thorough understanding of the fundamentals of counter-insurgency warfare. A counter-insurgency 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. The requirement to engage each potential target needs to be weighed against the risk of negatively impacting these Centres of Gravity. To practically apply offensive air power in a counter-insurgency war, its strengths and weaknesses must be understood within this fundamental context.

The traditional strengths of air power in conventional warfare are ill suited to the conduct of counter-insurgency warfare. Air power's ability to strike at strategic targets cannot be utilised in counter-insurgency warfare because insurgent groups are structured differently 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 counter-insurgency warfare. When offensive air power is used against insurgents it needs to be done carefully, as poor tactical application can work against strategic goals. 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 counter-insurgency 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 forces 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 non-linear 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 all offer a broad range of capabilities, some of which are better suited to counter-

insurgency 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 counter-insurgency fundamentals. The suitability of equipment in supporting counter-insurgency 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 counter-insurgency warfare and its principles. There has been little emphasis placed on understanding how offensive air power roles conform to counter-insurgency 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 counter-insurgency 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 the West, particularly from an air power perspective. Secondly, insurgent methods are well suited at 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 counter-insurgency warfare needs to be specifically incorporated 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 counter-insurgency environment. The suitability of various forms of equipment used in the employment of air power must be developed to better fulfil the roles required to support a counter-insurgency 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 correctly identify targets from sufficient standoff distances will also help reduce the chance of fratricide or the targeting of innocents. Low yield weapons should be developed to minimise collateral damage. The concept of non-kinetic weapons needs to be further developed to increase 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 counter-insurgency warfare must be given as least as much attention as the use of offensive air power in conventional warfare. The roles of offensive air power in counter-insurgency warfare require Joint development from the outset, reducing the need for procedures to be hurriedly developed at the tactical

level during the campaign. These procedures must be carefully developed and 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 counter-insurgency warfare in a way that achieves the greatest possible effect with the lowest possible risk to the campaign.

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