

The Kestrel Papers

A Selection of
Essays on Air Power



2018

Edited by
Lewis Frederickson

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Published and distributed by:

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FOREWORD

I am pleased to write the foreword to this inaugural edition of *The Kestrel* on behalf of the Air Power Development Centre. In compiling this slim volume, I have been privileged to work with a number of young service professionals who have had the opportunity to look more closely at the discipline of air power and where it will be heading during the second century of its rapid development.

In this, the title Kestrel-Eaglet seems particularly apt; indeed, the small Australian bird of prey, the Nankeen Kestrel (*Falco Cenchroides*), is a naturally inquisitive bird. This slender falcon is noted for hovering using rapid wing-beats while using its fan-shaped tail as a rudder to keep its head and body still as it closely observes the environment around it. Significantly, too, the Australian Kestrel is also cooperative, and a pair will share in their endeavours for common purpose. This is a particularly important notion for military aviators. Aside from stressing the inherently joint nature of the discipline of air power, it is important for professionals to share ideas and concepts. Therefore, I ask you to reflect on the following point as you read the thoughts of the young professionals in this short work:

A shining individual who stands alone or for self-interest is of little use; associating such shining, cooperative individuals, both subordinates and peers, will produce the greater effect.

I asked of these young professionals, drawn from among the three domains and internationally, to focus on a particular question during their studies that pertain to the now more than 100 years of air power: 'From its inception, air power has promised to deliver a new means of prosecuting war, while also affording a more 'strategic' approach to applying military force. Discuss to what extent the 'promise of air power' has been realised or not.' They and their fellows achieved this admirably to the extent that I had some difficulty selecting the number of contributors for this work. Finally, I was restricted by a word count; but, for this, I am grateful for the opportunity of reading the thoughts of all the young professionals who answered this question for me.

I must also acknowledge the insight of my esteemed colleague, Professor Sanu Kainikara, a consummate professional military aviator and mentor, for his Introduction to this first edition. There are lessons in his and the words of the young 'Kestrels' in this work. We are professionals in the service of our respective nations and societies. But that aim cannot be achieved without organised and cooperative effort. Understanding the discipline of air power and its wider contribution is central to developing us as professionals. With these matters in mind, I hope this work will give you generic insight into air power.

Until next time,

Lewis Frederickson PhD

Wing Commander

Chief of Air Force Fellow

Australian Defence Force Academy

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INTRODUCTION

THE INFLUENCE OF AIR POWER

Professor Sanu Kainikara

Air power as an element of national power projection capabilities has been a reality for more than a century. Therefore, it is not surprising that there is a considerable body of literature on air power, debating aspects as varied as the reason for its independence its command and control challenges to the extreme decisiveness its optimised application brings and to elaborating on the optimum strategy for its employment. Within this debate, one factor remains unquestioned—air power has had an inordinate influence not only on the conduct and characteristics of war, but also on the broad progress of human history itself.

A brief glance at the history of the development of air power, from the employment of balloons for observation, arguably the first capability that defined air power to its current position of primacy in most cases when military forces are engaged in conflict, clearly demonstrates that air power has always been decisive in the battlefield through the creation of both direct and indirect effects. Its influence percolates far beyond the battlefield, war or conflict and even the threat of war. From its inception in the early years of the 20th century, it has influenced the growth of industries, been at the vanguard of advances in technology and been a factor in determining the direction of the development of national policies. The influence of air power is ubiquitous in nature and will persist throughout the 21st century.

Air power is inherently dynamic in nature and therefore provides the impetus to seek solutions to emerging challenges to national security and to consider viable alternatives. Even so, it has remained a capability that is understood in a less than optimum terms and sometimes even misunderstood. Therefore, its employment, the effects it generates and ultimately its control at all levels of war has, and continues to be, contentious. Air power was propelled into the limelight in the first few decades of its debut as a military capability and even today continues to be at the vanguard of national power projection capabilities. In the past few decades, air power, in its broadest possible definition, has moved towards becoming an independent element of national power, as opposed to being one part of total military power. This is again a contentious issue and generates on-going debate.

A unique characteristic of air power has been that even though aerial warfare is merely a century old, the technology and tactics for its application have changed dynamically, swiftly and drastically. Air power has been able to absorb a continuous, and at times rapid, flow of technology-enhanced equipment, and employ them within the ambit of the new concepts developed by practitioners to create devastating effect. The practitioners of air power have regularly moved at a pace to enhance air power effects that the theorists and philosophers have found difficult to maintain.

The following example from the on-going conflict in Afghanistan illustrates the above point. In Afghanistan, air power was employed against an irregular adversary who employed asymmetry as a core principle of their warfighting strategy. It was readily apparent that the direct application of air power, as in previous engagements, would not produce the desired outcomes. Field practitioners applying the operational art of air power rapidly devised tactics to apply air power in new and innovative ways to create devastating kinetic effects. Simultaneously, they were able to undertake missions that provided humanitarian assistance to people in need, thereby enlarging the envelope of the spectrum of air power missions. There was no theory to back these innovations and no tested philosophy to use as a yardstick to measure success. Theories and doctrine for the employment of air power in irregular wars came later, empowered by the lessons that had already been learned in the battlefield.

The ability to innovate has been a unique advantage of air power. As with the dynamic nature of the capability, the practitioners have also been flexible and agile in their appreciation of emerging circumstances and threats, and in their instinctive reactions to counter these threats.

AIR POWER – ALTERING THE CONDUCT AND CHARACTERISTICS OF WAR

In 1918, at the end of World War I, air power had already proven its extreme usefulness in observation, reconnaissance and most importantly, in its ability to control the air. Strategic bombing remained a theoretical and aspirational goal with the public fear of such an eventuality far exceeding the extant destructive capability of air power. However, public fear provided the impetus for the formation of the Royal Air Force on 1 April 1918, the first independent air force in the world.

The theorists of the time were not far behind asserting the impact that strategic bombing would have not only on the conduct of war but also

on the society at large. The influence of air power on the conduct of war grew beyond recognition during World War II. The Allies exploited every facet of air power, including the nascent theory of strategic bombing; while the Germans were somewhat more focused on air defence and support to ground operations, epitomised in the concept of blitzkrieg. World War II also demonstrated the criticality of gaining and maintaining air superiority, with control of the air gradually equating to a pre-requisite to victory at the operational level. Although air power did not win the war in Europe, it was the single greatest advantage that the Allies had in the European theatre.

Air power played a far more dominant role in the Pacific Theatre during World War II. Japan and the Allies depended on both land-and carrier-based air power and the absence or availability of air power often was the critical point in turning the tide of a battle. The US-led drive across the South-West and Central Pacific was made possible only because of the uninterrupted availability of air power of the necessary calibre and needed quantum. Air power initially out-flanked the Japanese defences and subsequently carried out direct attacks on the Japanese home islands. The war in the Pacific was also brought to an end by air power, starting with the controversial fire-bombing of Tokyo and later by dropping atomic bombs of Hiroshima and Nagasaki.

While the advent of nuclear warfare was a true revolution in military affairs, it was perhaps more influential in the political conceptualisation of national security. The adoption of mutual-assured destruction as a national security strategy was made possible by air power ensuring the adequacy of nuclear deterrence. From a conventional perspective, during the Cold War air power continued to make significant contributions to maintaining the status quo, through its involvement in the Berlin Airlift, Korean War and then the Vietnam War.

The Vietnam War requires special mention for the singular reason that it brought out a timeless lesson regarding air power—the War demonstrated the universal truth that even the most advanced and powerful air power in the world cannot compensate for a flawed strategy to win wars. This fundamental lesson, well-learned by Western air forces created another milestone in air power's determined march towards 'self-actualisation'. Operation Instant Thunder, mounted at the beginning of the 1991 Gulf War to liberate Kuwait marked an unmistakable turning point in air power's journey towards military primacy. It combined the traditional elements

of air power development—aerodynamics, propulsion, flight controls and weapon systems—with the on-going computer revolution, to change the face of conventional war forever. Technology-enabled, enhanced precision, proportionality and discrimination facilitated by stealth altered the conduct and characteristics of the application of air power in a so far unimaginable manner.

In all military campaigns post-1991, Western governments have sought to employ air power as the first-choice-option, with varying success mainly dependent on political scrutiny and interference in the conduct of the campaign. It is fair to state that air power has come of age in the past three decades and is now an indispensable element within the military forces and critical to the success of military campaigns. Air power, employed independently or as a force-multiplying contributor to deterrence or in a surface campaign has been the single most significant agent of change in the conduct and characteristics of war, in more than a century.

THIS MONOGRAPH

Considering its overarching influence on a broad scale and large number of factors, it is obvious that air power should be assiduously studied and understood at all levels of war and command. Today, national security is critically dependent directly on the co-ordinated and optimised application of air power—either as a lead element or as a contributory capability to a whole-of-government approach to achieving imperative national objectives. In turn, that can only be assured by ensuring in-depth analysis and comprehension of the nuances of this dynamic force projection capability.

The collection of essays in this monograph have been written by young military officers. They provide an insight into the contemplations of the new generation of military leaders, taking their infant steps into the realm of professional military education, which I hope will be transformed into a life-long pursuit of excellence and erudition. These are essays that hone their skills to assume greater responsibilities in the military forces of their respective nations. The essays make fascinating reading, especially in the breadth of the factors that have been analysed. They indicate concerted attempts by the authors to come to grip with the dynamic nature of air power and the possibilities they present into the future.

I commend these essays to the reader.

AIR POWER IN THE 21ST CENTURY

CAPTAIN EMMETT BOURKE

In 1893, Major JD Fullerton of the British Royal Engineers prophesied that, in future conflict, 'the chief work will be done in the air, and the arrival of the aerial fleet over the enemy's capital will probably conclude the campaign.'¹ Even before the reality of powered flight, it was understood that control of the skies would bring great changes in warfare. This introduced the concept of air power, which can be defined as 'the ability to project military force by or from a platform in the third dimension above the surface of the earth.'² This essay discusses whether the potential shown by early air power has been realised today. The example of Operation *Desert Storm* is used to argue that air power has indeed changed how wars are prosecuted, but cannot be used in isolation to gain victory in war. Furthermore, this essay will discuss that believing that air power has generated a more 'strategic' approach to applying military force is a fallacy that is counterproductive to sound military strategic planning.

Military air power originated in World War I. The horrors of this attrition-style trench warfare led to the rapid search for military technology capable of circumventing it. More than any other style, the aircraft captured the imagination and popular belief of the masses that warfare could change. Beyond the technology itself, air power's proponents were seen to be offering alternatives to the style of military conservatism that led to the costs of the Great War.³ One of its first and finest, Giulio Douhet, surmised from World War I that the technologies the industrial revolution provided swung the advantage overwhelmingly in favour of any defending force.⁴ Conversely

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- 1 Alfred. F. Hurley Billy Mitchell: *Crusader for Air Power*, new ed. (Bloomington: Indiana University Press, 1975), p.175.
 - 2 Armitage M. J. and Mason, R. A. *Air Power in the Nuclear Age, 1945-82: theory and practice*, (London: Macmillan, 1983), p.2.
 - 3 John, Buckley. *Air Power in the Age of Total War*, Indiana University Press, Indianapolis, 1999, p.72.
 - 4 Phillip S Meilinger, *The Paths of Heaven: The Evolution of Air Power Theory*. (Maxwell AFB AL: Air University Press, 1997), p.8.

though, Douhet also concluded that only the new technology of the aircraft could 'overcome the fundamental problem of a prolonged war of attrition'⁵ that this technology seemingly guaranteed. Douhet proclaimed that despite its limited defensive capabilities, air power's offensive capacity would provide a more efficient way of fighting war that would reduce destruction and cost. This would be achieved the use of long range bombers targeting the critical infrastructure of the enemy, rather than the enemy force itself.

William 'Billy' Mitchell echoed Douhet's sentiments that bombers could win wars by 'destroying an enemy nation's war-making capability and will to fight.'⁶ Many early air-power theorists placed few limits on what constituted a war-making capability of the enemy, leading to the targeting of civilians and civilian infrastructure being generally accepted. This must also be understood as being a pre precision weapon system mentality. Mitchell furthered another of Douhet's ideas by reinforcing that the key to enabling air power's capability lay in 'establishing an autonomous air force, free of control by surface commanders.'⁷ Only under the control of air persons could air power be envisioned to reach its full potentials.

Despite its increasing influence throughout the 20th century, many believed air power's full promise had not been realised until Operation *Desert Storm* in 1991. The conventional style war, contained fully within a desert environment, provided the ideal circumstances for fully employing air power. The failings of the gradualist and supportist air-power plan from Vietnam resulted in Desert Storm being planned to produce 'cataclysmic and unrelenting pressure on the Iraqi nation.'⁸ Implementing precision weapon systems and using GPS made this plan possible. Under the control of John A. Warden III, coalition air power simultaneously

5 *Ibid*, p.9.

6 Mark A. Clodfelter, 'Moulding Air power Convictions: Development and Legacy of William Mitchell's Strategic Thought', in *The Paths of Heaven: The Evolution of Air Power Theory*. (Maxwell AFB AL: Air University Press, 1997), p.79.

7 *Ibid*

8 Edward, C. Mann. *Thunder and Lightning : Desert Storm and the Air Power Debates, Volume 2.* (Maxwell AFB: Air University Press, 1995), p.1-2.

struck targets across all five levels of Iraq's 'centres of gravity'⁹ causing full blown 'strategic paralysis' of the enemy.¹⁰ In just 43 days, coalition air power systematically dismantled Iraq's defences and set the conditions for ground forces. Over the whole operation, the USAF lost only 14 aircraft during more than 29,300 sorties, a loss rate of 0.048 per sortie.¹¹ The total domination of the airspace they achieved allowed the ground forces to sustain minimal casualties and topple the enemy in just 100 hours.

Operation *Desert Storm* proved to many that 'the ability to exploit the third dimension with relative freedom is the indispensable precondition of successful military operations.'¹² Technological and doctrinal developments have led to air power fulfilling many of the tactical aspirations of its early proponents. Desert Storm also became a turning point in what would be considered acceptable levels of casualties and collateral damage on the battlefield. However, some disparity still exists in air power's present versus anticipated capabilities. The most fundamental of these is that using air power without supports from other armed forces has not proven that it is solely capable of achieving victory in conflict. In many instances, independent air forces have been created to appease airmen's aspirations for self-determination. However, this has not generated an individual capacity to resolve conflicts. While Operation *Allied Force* is often used to disprove this view, this operation also involved extensive political action to complement the air power's kinetic effect, thus achieving a strategic effect.¹³ Air power has also been proven to inadequately influence irregular warfare. In these circumstances, land power has proven to be the only force capable of separating combatants from civilians and thus able to secure victory. Operation *Desert Storm* is a prime example of how air power should be used

9 David M. Lee, *The Role of Air power in Operation Desert Storm*. Order No. 1421554, (California: California State University, 2004). <https://search-proquest-com.wwwproxy1.library.unsw.edu.au/docview/305040274?accountid=12763>. p.20

10 Mann, 1995, p.72.

11 Daniel L. Haulman, *USAF Manned Aircraft Combat Losses 1990-2002*, Air Force Historical Research Agency, 9 December 2002. P.1.

12 Eliot, Cohen. 'The Meaning and Future of Air Power', *Orbis*, Vol. 39, No. 2, Spring 1995, pp189-200.

13 Daniel Lake, 'The Limits of Coercive Air power: NATO's "Victory" in Kosovo Revisited' in *International Security*, Vol. 34, No. 1, Summer 2009, p. 86.

in conflict. Its effectiveness was made possible by detailed planning and integrating with land power to achieve combined objectives.

Despite the clear need for both, in contemporary conflict, the relative influence of air power has surpassed that of land power. However, unlike air power, it does not relate directly to a more 'strategic' approach to military force being employed. This is because air power's long range and precision capabilities lead it to be perceived as inherently strategic, because others do not challenge this inflated view of air persons. Discussing air power is also overcomplicated by the lack of a clear vocabulary¹⁴ as the term strategic is applied liberally to many physical actions or effects. Strategy is the use of military capabilities to achieve political objectives. In conflict, both elements are essential and strategy 'is the glue which binds each to the other and gives both sense.'¹⁵ This clarifies that no individual weapon or asset can be strategic in nature; it can only be determined by its consequences.¹⁶ What air power provides are new avenues and options for applying military force. This contributes to only one portion of what makes strategy. Air-power greatness lies in its ability to project power and generate mobility. Both of these have indeed changed how wars are fought, but not why they are.

Collectively, early advocates of air power promised that it would provide 'quick, clean, mechanical, and impersonal solutions to problems with which others had struggled for centuries.'¹⁷ Technological and doctrinal air-power developments have indeed made this possible and made air power a prerequisite for victory in war today. Operation *Desert Storm* and Operation *Allied Force* epitomised air power's ability to rapidly project power while minimizing casualties and destruction. In this sense, many of the promises of early air power have been achieved. However, recent examples in conventional and irregular warfare have shown that air power alone cannot

14 MacIsaac, 1986, p.625.

15 Hew, Strachan. *The Direction of War: Contemporary Strategy in Historical Perspective*, (New York: Cambridge University Press, 2013), p.60.

16 Colin S. Gray, 'Understanding Air power: Bonfire of the Fallacies', *Strategic Studies Quarterly*, (Alabama: Maxwell AFB) Winter 2008, p.51.

17 David MacIsaac, 'Voices from the Central Blue: The Air Power Theorists', in Peter Paret (ed.), *Makers of Modern Strategy*, (New Jersey: Princeton University Press, 1986), p.626

bring about victory in conflicts. Having and integrating with land forces will always be required. While air power indeed has the capacity to influence strategy, believing that it is inherently strategic is a fallacious. It must be recognised that 'air power's history is short—all of it can be contained in a single lifetime.'¹⁸ Further experience and theory may be required to better establish air power's role in the development of strategy. John A Warden III concluded that 'the only reasonable purpose of war ought to be to win the peace that follows.'¹⁹ Air power has achieved the promise of being able to facilitate this, but cannot alone secure it.

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18 Meilinger, 1997, p.xii.

19 John, A. Warden. 'Success in modern war: A response to Robert Pape's *bombing to win*', *Security Studies*, vol. 7, No. 2, (1997), p.173.

AIR POWER IN THE 21ST CENTURY

LIEUTENANT COMMANDER KANOK BUNNAG

Air power has flourished since the inter-war period to the extent that many air-power theorists, such as General Giulio Douhet, Sir Hugh Trenchard, and General William 'Billy' Mitchell, suggested that it would be a potentially decisive force in military conflict. Although air-power theories have offered a new means of prosecuting war and a fundamentally more strategic approach to the utilisation of forces in military engagement, air power has not always provided anticipated results. The promise of air power as this decisive force has not been realised especially in irregular wars. This essay first highlights the classical air-power theories, and then the air capabilities as new means in war fighting. Subsequently, the essay examines the reasons why the promise of decisive and strategic air power was not realised in the Soviet-Afghan war. In contrast, air power was recognised for being essential to joint service operations especially in air-land warfare.

The classical air-power theorists regarded air power to be a new means to achieve military objectives. During the years between the World Wars I and II, air-power theorists described strategic bombing as potentially a 'knock-out blow' in a war campaign.¹ It offered an alternative and more preferable method than 'the squalid slaughter in the trenches.'² Douhet's famous book, *The Command of the Air*, illustrates the significance of air command which was preferably gained by neutralising an adversary's air forces on the ground.³ In addition, he proposed air-attacking the enemy's national institutions and infrastructure to win a war by strategically destroying the enemy's morale.⁴ Similarly, General William 'Billy' Mitchell

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- 1 Alan Stephens, "The True Believers: Air Power between the Wars," in *The War in the Air, 1914-1994*, ed. Alan Stephens (Maxwell Air Force Base: Air University Press, 2001), p. 21.
 - 2 Ibid.
 - 3 John Buckley, "The Development of Air Power Doctrine and Theory, 1918-1939," in *Air Power in the Age of Total War* (London, United Kingdom: Routledge, 1998), p. 76.
 - 4 Ibid., 75.

embraced the bombing as a vital strategy to win a war. He reasoned that aerial bombing was a humane method in fighting a war because such could end the war quicker,⁵ thus lessening the death and casualty rate. Trenchard also understood the significance of strategic bombing, especially its effects on the enemy's will to fight. Beyond that, he envisaged 'air interdiction'. He saw the importance of air operations combining with army effort on the ground and insisted, 'I desire to emphasize that operations conducted by bombing squadrons cannot be isolated from other work in the air, and are inseparable from the operations of the Army as a whole...If an offensive is being undertaken on the ground, the work of bombing machines should be timed and coordinated so as to produce the maximum effect on the enemy.'⁶ These theories apparently emphasised the strategic effects of using air power in conflicts.

In addition, air power has offered new capabilities in war fighting. It provides 'timely mobilisation, rapid deployment, decisive fire power, comprehensive situational awareness, and essential support when and where required.'⁷ Ability to travel from place to place in a shorter time period than that of the ground and surface forces is essential for operations. This is because not only can it project force and fire power onto objective areas, but also respond quickly to any crisis. Furthermore, being able to penetrate into enemy's defensive line are important for intelligence, surveillance, and reconnaissance (ISR), and especially to the deliver precision strike against adversaries. Additionally, being able to rapidly support one's own forces benefits both force protection when advancing into objective areas.

Nevertheless, the promise of air power as a decisive means to end war was not realised in the Soviet intervention in Afghanistan from 1979 to 1989. The Soviet military power doctrine was primarily land oriented.⁸

5 Stephens, "The True Believers: Air Power between the Wars," p. 27.

6 Phillip S. Meilinger, "Trenchard, Slessor, and Royal Air Force Doctrine before World War II," in *The Paths of Heaven : The Evolution of Air power Theory* (Maxwell AFB, Ala: Air University Press, 1997).

7 Sanu Kainikara, *The Air Campaign : The Application of Air Power*, CAF Occasional Paper, (Air Power Development Centre Tuggeranong, ACT, 2008) p. 2

8 Robert A Sutley, "The Soviet's Use of Air power in a Counterinsurgency Campaign," (Air Command and Staff College Maxwell AFB AL, 1987), p. 7.

This doctrine perceived air power as additional to support land operations. During the ten-year conflict, while air power did not provide significant strategic effects to win a war, it rather provided operational and tactical advantages. Strategic bombing, a primary means in classical air-power theories, was generally ineffective when dealing with low-intensity conflicts such as counterinsurgency operations because of two major reasons. The first was that the centre of gravity in low-intensity conflicts was social-political in nature.⁹ In the Soviet fight against Mujahidin insurgents in Afghanistan, the insurgents were driven by religious motives, which were unable to be won by aerial bombarding. Secondly, strategic targets in this conflict were less tangible.¹⁰ The constrained geographical environment made it more difficult to identify and strike targets.¹¹ Furthermore, attacking populations was deemed counterproductive as it incited more hatred among civilians and encouraged them to join the adversary.¹²

Being unable to achieve the conventional effectiveness of air power, the Soviets had adapted their air power throughout the conflict by intervening in Afghanistan to revitalise the Afghan faltering communist government.¹³ They initially entered the campaign with conventional readiness, but were drawn unprepared for irregular for the warfare.¹⁴ Since high performance aircrafts had limited roles in the conflict, no air-to-air combat was needed. Additionally, such combat was ineffective in locating and attacking efficiently the small groups of guerrilla forces operating in tough terrain.¹⁵ As a result, high performance aircrafts were used mainly for interdiction and terrorising the population, thus preventing it from supporting the Mujahidin. On the other hand, helicopters appeared to be key to the Soviet campaign. The

9 David Willard Parsons, "Toward the Proper Application of Air Power in Low-Intensity Conflict" (Monterey, California. Naval Postgraduate School, 1993).

10 Ibid.

11 Sutley, "The Soviet's Use of Air power in a Counterinsurgency Campaign."

12 Parsons, "Toward the Proper Application of Air Power in Low-Intensity Conflict."

13 Lester W. Grau, "Securing the Borders of Afghanistan During the Soviet-Afghan War," *The Journal of Slavic Military Studies* 28, no. 2 (2015): p. 415.

14 Geoff Shaw and David Spencer, "Fighting in Afghanistan: Lessons from the Soviet Intervention, 1979–89," *Defense & Security Analysis* 19, no. 2 (2003).

15 Sutley, "The Soviet's Use of Air power in a Counterinsurgency Campaign," p. 5.

number of deployed helicopters increased from 60 to 300 in 1981.¹⁶ They were employed in air-ground integrated operations to support the ground forces' troop transport, fire support, airborne command and control, delivery of logistic support, force protection, delivery of chemical weapons, and medical evacuation.¹⁷ The tactic of low flying and popping-up attack was also developed to avoid anti-air capabilities of the adversary.¹⁸

The most recognised capability of air power in the Soviet-Afghan War was air mobility. Strategic airlift was essential in projecting forces into the theatre, as well as transporting forces and logistic support during the operations. By deploying an airborne division and equipment to Kabul to begin its invasion The Soviets conducted a three-day airlift operation with an average of 75-120 sorties a day.¹⁹ Furthermore, the Soviets adopted the model of the vertical aerial envelopment, thus inserting 'mountainous terrain tactical airborne landings or forward detachments into high ground and/or the enemy flank and rear as part of a march formation in anticipation of an engagement there.'²⁰ The ability to rapidly manoeuvre troops to strike the enemy's flank and rear had proved to be vital in their engagement against the Mujahidin. This was because the heliborne detachments could isolate the Mujahidin forces, destroy their bases, cut their lines of communication, and block their withdrawal routes.²¹ The tactic has been central to not only the Soviet tactical and operational manuals²², but also the U.S. Army Field Manuals.²³

16 Stephen Blank, "Airmobile Troops and Soviet Airland War: From Afghanistan to the Future," *The Journal of Soviet Military Studies* 5, no. 1 (1992): p. 30.

17 Sutley, "The Soviet's Use of Air power in a Counterinsurgency Campaign," p. 13.

18 Ibid.

19 Joseph Collins, "Soviet Military Performance in Afghanistan: A Preliminary Assessment," *Comparative Strategy* 4, no. 2 (1983): p. 151.

20 Blank, "Airmobile Troops and Soviet Airland War: From Afghanistan to the Future," p. 30.

21 Shaw and Spencer, "Fighting in Afghanistan: Lessons from the Soviet Intervention, 1979-89," p. 185.

22 Blank, "Airmobile Troops and Soviet Airland War: From Afghanistan to the Future," p. 30.

23 US Army, "Fm 3-90, Tactics," *Headquarters of the Army, Washington DC* 4 (2001).

In summary, the promise of air power according to classical air-power theorists was not realised in an irregular war, as exemplified in the Soviet-Afghan War. The strategic effects of air power could not decisively end the conflict. The Soviets eventually withdrew their forces from the war without successfully achieving the impact planned for their air-power strategy. Then again, the capabilities they implemented in the Afghanistan campaign ultimately proved beneficial to Soviet air power. Moreover, the lessons learned have been useful to the extent of becoming a model for conducting contemporary counterinsurgency warfare. Air power has thus proved to be an essential element in modern-day military operations strategically and tactically.

Lieutenant Commander Kanok Bunnag, Royal Thai Navy, is a current International Military Liaison Officer at the Australian Defence Force Academy. Bunnag has served as a navy principle warfare officer for 10 years with experience in both maritime domain and staff position. He also has experience in counter-piracy operations as he deployed to the Gulf of Aden in 2011. Lieutenant Commander Bunnag is currently undertaking a master's degree Studies in Strategy and Security at University of New South Wales, Canberra.

AIR POWER IN THE 21ST CENTURY

LIEUTENANT REGINA CAMPBELL RAN

The ability to fly challenged the imagination of many, especially military strategists, after it was created at the outset of the 20th century. Applying flight to the military, that is, air power, attracted those watching World War I because of its potential to dominate the battle space by offering surveillance, supply and an extension of the strategic reach of a battle commander through precise targeting.¹ However, its technology has been slow to match this potential because air power will remain hamstrung as long as it aims to achieve quick and complete military victories at the expense of a combined-forces effort.

In effect, air power has long promised battlefield control at low human cost since being introduced to war in 1914 although its platform then limited to reconnaissance missions and rudimentary air-to-air combat.² Its potential within then technological limits was arguably not realised until 1917, when an Australian General successfully integrated both air and ground battlefield resources to achieve a decisive victory on the Western Front.³ Sir John Monash broke new ground when he employed 18 planes to bomb the target area, Hamel, and older and noisier aircraft to disguise the ground movements of tanks and batteries.⁴ As the war proceeded, bombing strikes against strategic targets were being advocated by decision makers as the most 'prominent and determining factor for peace.'⁵

1 John Buckley, *Air Power in the Age of Total War* (London: UCL Press, 1999), p. 2.

2 Peter Paret, Gordon Craig and Felix Gilbert, *Master of Modern Strategy* (New Jersey: Princeton University Press, 1986), 628. Initial assessments of air contribution to the fighting effort were limited to transport and reconnaissance before the platform was equipped with basic weaponry to fire at other aircraft.

3 P. Roland, *Monash: The Outsider who won a War* (Sydney: Random House Australia, 2004), p. 2.

4 Roland, *Monash*, p. 4.

5 Sir Frederick Sykes advising the British Cabinet during World War I, as quoted by Alan Stephens, "The True Believers: Air Power between the Wars" in *The War in the Air: 1914-1994*, ed. Alan Stephens (Maxwell Air Force Base: Air University Press, 2001), p. 49.

Whereas this potency was produced by combining military assets, it was understandably interpreted as an alternative to trench warfare—a stalemate that resulted in unimaginable destruction of life and property.⁶ Italian air strategist Giulio Douhet was an early proponent of air strikes and postulated that, during the interwar period, the strategic bombing of cities and factories, or civilian targets, could defeat the enemy, if its air forces had been neutralised.⁷ While Douhet ‘grossly exaggerated’ the value of air strikes, especially in light of such technological advancements as radar, his ideas motivated commentators to perpetuate further the myth of air power’s potential to dominate all forms of war.⁸ British strategist, Liddell Hart, speculated that aerial bombing would dominate warfare to the detriment of all other forms of conventional force.⁹ Edward Warner, during World War II, argued that, far above anything, speed and elevation provided by naval and ground forces, would allow complete destruction while providing relative safety.¹⁰ In the interwar period, Mitchell highlighted the inability to mire aircraft in trenches, proposing that the platform would dominate the battlefield as long as it was able to obliterate any opposing air force.¹¹ These ideas were very much shaped by the horrific destruction resulting from trench warfare and strongly influence the collective consciousness. Such ideas, however, were based on the previous war and then implemented in

6 Buckley, *Air Power*, pp. 70-71, 77.

7 Giulio Douhet, *The Command of the Air*, trans. D. Ferrari (Washington: Office of Air Force History, 2012), viii-4; Buckley, *Air Power*, p. 76.

8 Col Philip Meilenger, *Paths of Heaven: The Evolution of Air Power Theory* (Alabama: Air University Press, 1997), xiv; Buckley *Air Power*, p. 77.

9 Alan Stephens, *Kosovo, or the Future of War* (Canberra: Air Power Studies Centre, August 1999), 4. Buckley, *Air Power*, pp. 75-76, lists such strategists as Lanchester, Charlton, Saundby and Seversky as referencing Douhet while putting forward their own theories professing the dominant power of the air.

10 Paret, Craig and Gilbert, *Master of Modern Strategy*, p. 629.

11 William Mitchell, *Winged Defense: The Development and Possibilities of Modern Air Power – Economic and Military* (Tuscaloosa: University of Alabama Press, 1925), p. 10.

World War II and Vietnam, two very different conflicts that presented new challenges to the burgeoning air power.¹²

Once World War II began, achieving air superiority, or operating air forces unopposed, has been a 'necessity' within conflict.¹³ In other words, air power would be required to take priority over every other force element so that the platforms take full responsibility for air power's success or failure. However, nuclear bombs were the only air power during World War II that could claim a decisive win¹⁴ because only 20 per cent of bombers struck within five miles of their targets, thus reducing confidence in air-power ability.¹⁵ While the Japanese attack on Pearl Harbor demonstrated air power's value by dealing a severe blow to the U.S. Fleet, this superiority did not cripple the Fleet.¹⁶ Even the devastating effects of the mass bombings campaigns by Allied Forces did

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- 12 P. Gordon, "Air Power Won't Do It" in *The Washington Post*, Online edition, 2006) describes the concept of 'Strategic bombing fallacy' which undermined World War II and Vietnam bombing campaigns against 'strategic' or civilian infrastructure in order to rally support against the enemy among its own people. This was an utter failure. Robert Pape, *Bombing to Win: Air Power and Coercion in War* (Ithaca: Cornell University Press, 1996), 24 and 66. Pape defines coercion as the punishment of the civilian population, raising costs and risks to unacceptable levels to force change in a state's behaviour, while air power is its most important tool.
- 13 John Warden, *The Air Campaign* (Washington: Pergamon-Brassey's, 2000), p. 10.
- 14 Dr Karl Mueller states that a single atomic bomb could produce the same destructive impact as a large conventional air raid, making it a decisive weapon with the ability to threaten complete annihilation by air. 'Strategic Air power and Nuclear Strategy: New Theory for a Not-Quite-So-New Apocalypse' in *The Paths of Heaven: The Evolution of Air power Theory*, ed. Col. Phillip Meilinger (Alabama: Air University Press, 1997), p. 281.
- 15 Tami Davis Biddle, *Rhetoric and Reality in Air Warfare: The Evolution of British and American Ideas about Strategic Bombing 1914-1945* (Princeton: Princeton University Press, 2002), p. 2.
- 16 Roberta Wohlstetter, *Pearl Harbor: Warning and Decision* (California: Stanford University Press, 1962), 69, 94 and 340.

little to diminish morale.¹⁷ Dunlap argues that air power, despite superiority in destroying physical targets, is restricted in its ability to destroy morale—a key to enduring the bitter war conditions faced by the British public during the German blitzkrieg in World War II.¹⁸

This restriction is due to the effect of its use on public support, even for the enemy, as seen in protests in Australia and the United States against the war in Vietnam. Democracies and their military arguably must adhere to the law in their actions to accomplish their missions, as a failure to do so can de-legitimise the action on home ground.¹⁹ Despite a heavy air campaign, the Douhet-style strategy of striking against strategic targets in the North to diminish public support and increase pressure on the enemy by changing tack failed to do anything but garner anti-war sentiment at home.²⁰ Such campaigns limit air power in its application to its kinetic attributes, which arguably are less powerful than its support and intelligence in many cases. According to Clodfelter, while strategic bombing is not able to completely dominate, as previously claimed, it is continually heralded as an alternative to ground elements.²¹ Even though air power did not possess the accuracy required to lower civilian casualties, it was being touted as a method by which it could single-handedly dominate the battlespace.²² The USAF dropped 162 000 tons of bombs and other ordnances during the Vietnam conflict, while the U.S. Navy and Marine Corp further expended 1.5 million

17 Mark Clodfelter, *The Limits of Air Power: The American Bombing of North Vietnam* (Nebraska: University of Nebraska Press, 2006), 8. Clodfelter surmises 305,000 civilian deaths in the bombing raids. Gordon, “Air Power Won’t Do It”. Gordon states such destruction rallied support for the enemy on home soil. Col. John Warden, “The Enemy as a System” in *Air Power Journal*, Spring Edition, 1995, p. 51. Warden supports this through the statement that the German public did not turn on their governments despite massive casualties.

18 Col. John Warden, “The Enemy as a System”, p. 43.

19 Charles Dunlap, “Lawfare: A Decisive Element of 21st Century Conflicts?” in *JFQ*, Issue 53, 3rd Quarter, 2009, p. 35.

20 Clodfelter, *The Limits of Air Power*, p. 30.

21 Clodfelter, *The Limits of Air Power*, p. 151.

22 Clodfelter, *The Limits of Air Power*, p. 29.

tons in Southeast Asia.²³ This expenditure translates to 13 150 kilograms to kill each person, a phenomenal cost in the light of the finance required for ground troops and ammunition.²⁴ The end result was not domination of the battlespace, let alone an end to the war; the most decisive element of air power was arguably providing intelligence and versatility, which have continually proven to be crucial in various conflicts.²⁵

Air power has more recently decisively contributed to conflicts after developing unmanned systems, intelligence gathering and accuracy. Using drones, missiles and even an F-16 unmanned vehicle in air-to-air and ground-strike missions are the key to future development that could include assets such as the F35 JSF.²⁶ Expecting complete dominance through air power alone may be naïve as it relates to air strike campaigns against small targets, such as terrorist cells using rockets and other small weaponry. However, to disregard aircraft and their uses as anything but essential to success in modern warfare is ridiculous.²⁷ In the first Gulf War, an extremely technologically advanced air force conducted about 52 000 sorties that saw the Iraqi air defence destroyed and the country's electrical grid, oil refineries and communications deactivated.²⁸ While such an impressive show of force was not the sole reason for Iraq's loss, it was a decisive blow. In Bosnia, Operation *Deliberate Force* was able to drop over 1000 bombs and incur only 25 civilian casualties, none of which could be exploited by the enemy according to 'legal warfare.'²⁹ Yet it was arguably the addition of Croatian

23 Greg Grandin, *Kissinger's Shadow: The Long Reach of America's Most Controversial Statesman* (New York: Metropolitan Books, 2015), p. 71.

24 Grandin, *Kissinger's Shadow*, p. 71.

25 Cohen, "The Meaning and Future of Air Power," p. 189.

26 PRNewswire (2017), 'U.S. Air Force, Lockheed Martin Demonstrate Manned/Unmanned Teaming' accessed online.

27 P. H. Gordon, "Air Power Won't Do It", in *The Washington Post* online, 25 July 2006, provides examples of the ineffectiveness of air strikes by Israel against Hezbollah targets, stating that the 'Strategic Bombing Fallacy' only stiffens resolve rather than breaks public support for political use of warfare. He also provides examples of similar resolve when this fallacy was utilised in the Iraq War.

28 Eliot Cohen, "The Mystique of US Air Power" in *Foreign Affairs*, Vol. 7, No. 1, 1994, pp. 110-111.

29 Clodfelter, "A Strategy Based on Faith", pp. 152-3.

ground forces that provided the final blow to Milosevic. These examples show that, in conventional warfare, air power is a crucial element of force, rather than the sole deliverer of victory.

In unconventional terms, air power has been crucial through innovative techniques and application, demonstrating that technology is not the only facet through which the platform can provide a decisive role. Following the World War II, the RAF saw significant successes against Communist insurgents during the Greek Civil War, previously supported in activities against the invading Germans. The RAF was so successful in a 'textbook example of urban warfare' because of its dual role in supply and close air support because any kinetic actions were 'precise and proportional'.³⁰ Lebanon converted previously unarmed helicopters into bombers in a conflict against Israel, providing an unexpectedly proficient delivery platform for strikes at great personal risk to pilots and ground staff.³¹ While no conventional or unconventional conflict has proven that air power alone can win war by attaining air superiority, it can help determine the end.

While the aspirations of air power arguably far outweighed the technology for a century after its introduction to war, there can be no doubt at its potential and continued importance. The aircraft has provided and continues to provide many options for the military that can assist in ending a war quickly with few civilian casualties. There is yet to be an example of air power proving to be the sole reason for success, without other assistance. Despite its natural assets of intelligence gathering, support services and lethal accurate force, its true potency remains in its combined role with other elements.

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30 Christina J. M. Goulter, "The Greek Civil War: A National Army's Counter Insurgency Triumph" in *The Journal of Military History*, 1 July 2014, 1022-3. The article explains that these limitations on air power were imposed by the Greek authorities.

31 Joao Paulo Moralez and Vatche Mitilian, "Heavy Duty: Lebanon's DIY 'HUEYBOMBERS'" in *The Aviation Historian*, Iss. 23, 2018, p. 101.

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AIR POWER IN THE 21ST CENTURY

LIEUTENANT MICHAEL COPLAND RAND

‘Simply stated, air power won the Gulf War’ Richard P. Hallion.¹

INTRODUCTION

The opening quotation of this essay is a pertinent example of the perceived decisive nature of air power in the Persian Gulf War, a conflict widely regarded to be a watershed moment for air power. This essay will argue that the air campaign in the Persian Gulf War may have come the closest of any major conflict since World War II to realising the ‘promise of air power’; however, it is unlikely that air power single-handedly won the war. This essay will define the ‘promise of air power’ as it was interpreted by Stephens in his work on early air-power theorists: ‘the belief that offensive air power through the form of bomber aircraft would dominate future wars, to the extent that it alone could decide the outcome.’² This essay will identify the circumstances of the Gulf War and their suitability to the use of air power, examine the arguments for air power’s ‘decisive’ impact in the conflict and contrast these against more skeptical assessments, and, then weigh these arguments against the criteria of the ‘promise of air power’.

A UNIQUE CONFLICT

The circumstances surrounding the Gulf War were well suited to the use of U.S. air power. As a RAND report notes, the war occurred at the culmination of several key developments for the U.S.: ‘the end of the Cold War, a new focus on regional security issues, the culmination of the

1 Dana Johnson, James Winnefeld and Preston Niblack, *A League of Airman: U.S. Air Power in the Gulf War* (RAND: Santa Monica, 1994), p. 277.

2 Alan Stephens, “The True Believers: Air power between the Wars.” in *The War in the Air 1914-1994*, ed. Alan Stephens (Maxwell Air Force Base: Air University Press, 2011), p. 48.

defence build up of the 1980s and of developments in service doctrines and organisation.³ While the majority of the air-power weapons used in the war were evolutionary improvements of those used in Vietnam, some new weapons and platforms—such as the F-117A stealth bomber, the Tomahawk land-attack cruise missile, and the JSTARS airborne targeting platform—were now available to U.S. commanders.⁴ However, Cohen notes that it wasn't these new or upgraded platforms alone that allowed coalition air power to be so successful in the Persian Gulf,⁵ the war also saw a 'vast increase in usable and communicable information'⁶ for use by coalition forces. According to the RAND authors, the Gulf War also offered advantages to air power in the form of 'terrain, weather, access to the theater, existing base structures, maladroitness of the opponent, etc.'⁷ These unique circumstances arguably set the stage for a demonstration of the potential of 'modern' air power.

THE TRUE BELIEVERS

Following the conflict, a number of commentators argued strongly in support of the 'decisive' influence of air power, and it is widely perceived that air power was responsible for the destruction of the Iraqi military. U.S. President George H. Bush noted: 'Lesson number one from the Gulf War is the value of air power.'⁸ while General Merrill A. McPeak was quoted as saying: 'This is the first time in history that a field army has been defeated by air power.'⁹ The reason for this enthusiasm is understandable, as Cohen highlights air power was responsible for some impressive statistics during the conflict; the coalition launched over 52,000 air-to-surface sorties, delivering over 200 thousand munitions—including 9,300 guided bombs—which resulted in the destruction of the Iraqi air force, air defence

3 Johnson, Winnefeld and Niblack, *Air Power in the Gulf War*, p. 3.

4 Johnson, Winnefeld and Niblack, *Air Power in the Gulf War*, p. 13.

5 Eliot Cohen, "The Mystique of U.S. Air Power," *Foreign Affairs* Vol. 73, no. 1, (Jan-Feb 1994): 109.

6 *Ibid.*, p. 112.

7 Johnson, Winnefeld and Niblack, *Air Power in the Gulf War*, p. 8.

8 Johnson, Winnefeld and Niblack, *Air Power in the Gulf War*, p. 277.

9 *Ibid.*, p. 277.

system, key infrastructure, and managed to '[disrupt] Iraqi logistics and immobilised the Iraqi army.'¹⁰ Interestingly, air power may have come close to achieving an early theorist's prediction of its potential psychological effects; Trenchard theorised that 'if we could bomb the enemy more intensely and more continually than he could bomb us the result might be an early offer of peace.'¹¹ Cohen argued that 'massive raids by B-52s raining down conventional bombs helped crush the morale of Iraqi soldiers,'¹² which may have led, at least partially, to the large surrender of Iraqi troops.¹³ While he argues against it, Press notes that the 'conventional wisdom' is that 'air power neutralized the Iraqi military before the ground war began.'¹⁴

THE SCEPTICS

A smaller number of commentators argue against what Press described as the 'conventional wisdom', noting while undoubtedly effective, air power alone was not responsible for the coalition's victory in the Gulf War. This view is succinctly summarised in a quote from Friedman in the RAND report: 'The air assault to soften up the Iraqi Army was both effective and essential. It did not create the pure 'victory of air power' trumpeted at the time, but it did make a tremendous difference in the ease of the allied victory.'¹⁵ In his summary of Friedman's writing, Divine notes that he downplays air power's role by examining where it apparently failed, including the ineffectiveness of the 'SCUD hunt' and failures in bomb damage assessment.¹⁶ Citing the 'myth' of air power, Press goes further to argue that 'with or without the air campaign, the coalition's ground attack would have led to a rout of historic

10 Cohen, "The Mystique," p. 110.

11 Phillip Meilinger, *The Paths of Heaven, The Evolution of Air power Theory* (Maxwell Air Force Base: Air University Press, 1997), p. 51.

12 Cohen, "The Mystique," p. 116.

13 Press, "The Myth," p. 36.

14 Ibid., p. 5.

15 Johnson, Winnefeld and Niblack, *Air Power in the Gulf War*, p. 279.

16 Robert Divine, "Historians and the Gulf War: A Critique," *Diplomatic History* Vol. 19, no. 1 (Winter 1995): p. 119.

proportions.’¹⁷ As he notes, Press isn’t arguing that air power was ‘irrelevant’, rather that its role has been overplayed and sufficient consideration has not been given to the impact and lethality of U.S. and British ground forces in the war.

In hindsight, some of the claims about the decisiveness of air power in the conflict do seem somewhat grandiose; Hallion’s claim that ‘air power won the Gulf War’¹⁸ is a prime example. Highlighting the excitement of the time, the RAND authors noted that the U.S. air force may have been drawing ‘too many comfortable conclusions from a unique conflict.’¹⁹ Divine notes that Friedman and a number of other ‘skeptical’ authors all draw a similar and important conclusion: ‘All would agree that the bombing of Iraq was a vital precursor to the final ground offensive, but they contend that Iraq could not have been defeated by air power alone.’²⁰ This view, counter to the ‘conventional wisdom’, does appear to offer a more balanced interpretation of air power’s influence in the Gulf War.

REALISATION OF THE ‘PROMISE’?

Noting the conflicting interpretations of the overall effect that air power had in the Gulf War, it is unlikely that the ‘promise of air power’ was realised in the conflict. However, the Gulf War may have come closest of any major conflict since World War II to achieving this. Cohen proposed that ‘air power dominated the Persian Gulf War as no other conflict since World War II.’²¹ Despite this ‘domination’, it is unlikely that air power alone decided the outcome of the war, therefore not reaching the lofty criteria set by early air-power theorists. To argue otherwise would ignore the contribution of allied ground forces in their campaign against the Iraqi army in Kuwait, which Press contends has been significantly underestimated.²² However, the RAND authors note an important argument—that ‘Desert

17 Press, “The Myth,” p. 7.

18 Divine, “Historians and the Gulf War,” p. 119.

19 Johnson, Winnefeld and Niblack, *Air Power in the Gulf War*, p. 259.

20 Divine, “Historians and the Gulf War,” p.120.

21 Cohen, “The Mystique,” p. 123.

22 Press, “The Myth,” p. 7.

Storm was not a vindication of air power as the decisive arm of war, but the culmination of a process of making air power the equal partner of its two elder brothers, land and maritime power.²³ Former Secretary of Defense, Dick Cheney expanded on these ideas, highlighting that, while air power made a significant contribution, ‘the combined effects of the air, maritime, and ground offensives, with important contributions from many supporting forces—were key.’²⁴ While not realising the ‘promise’, air power in the Gulf War likely contributed more to the war effort than in any other conflict since World War II by its more effective support and integration with the other forms of military power.

CONCLUSION

Air power likely made a significant contribution to the coalition victory in the Persian Gulf War, and it may have come closest of any conflict since World War II to realising the ‘promise of air power’. There is debate regarding precisely how much effect it may have had, and for this reason it is difficult to argue that air power alone was responsible for winning the war. Despite likely not completely realising the ‘promise of air power’, a challenging task noting the criteria, the Gulf War may have shown that air power had come of age, and demonstrated how effective it could be when combined with the traditional forms of military power.

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23 Johnson, Winnefeld and Niblack, *Air Power in the Gulf War*, p. 282.

24 Ibid, p. 277.

AIR POWER IN THE 21ST CENTURY

FLIGHT LIEUTENANT LISA HINTON

The promise of air power was purported by early Air-power theorists eager to avoid repeating the prolonged carnage and heavy costs of World War I. Broadly, Douhet, Trenchard and Mitchell theorised that, as long as control of the air was achieved, air power could defeat the enemy with a knock-out blow through strategic bombardment.¹ This would render the requirement for a land or naval battle redundant. Essentially, the promise of air power was that it could win wars (achieve national political intent) swiftly and with minimal loss. Early theories were devised with a significant lack of technology and experience. These theories served to advocate and generate interest in air power however were ultimately flawed. Air power cannot win a war alone, however exponential growth in technology, experience and doctrine have enabled it to fulfil some of the early promises to a large extent in recent times.

Air strategic bombardment failed miserably in meeting its promise of minimal cost in World War II. Limited technology made the bombing of industrial and military targets unachievable without significant losses. For the RAF, approximately '55,000 aircrew died in raids over Europe between 1939 and 1945, the highest loss rate of any major branch of the British armed forces'². A contributing factor to these losses is that the British did not obtain control of the air prior to attempting to exercise it; the German fighter aircraft found the lumbering British bombers easy targets.³ This caused the British to conduct their missions at night where they might find cover under darkness. The technology was inadequate to allow the bombers to be appropriately armoured, navigate by night, nor locate their targets

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- 1 Buckley, *Air Power in the Age of Total War*, Indianapolis: Indiana University Press, 1999, p 78
 - 2 Fielder, *The Air War, and British Bomber Crews, in World War Two*, BBC, 17 Feb 2011, http://www.bbc.co.uk/history/worldwars/wwtwo/air_war_bombers_01.shtml
 - 3 Howard, *The Concept of Air Power: An Historical Appraisal*, *Air Power History*, (Winter 1995), pp 8-9

accurately. A 'hit' counted if it fell within 5 miles of the target.⁴ In 1941, one in four planes hit their targets, while over the Ruhr Valley (centre of German industrial production), the success rate dropped to one in fifteen.⁵ The cost was 700 bomber aircraft and their crews of up to seven men each.⁶ While strategic bombing did change the course of the war, particularly in the case of the Ruhr Valley where industrial targets were destroyed, it came at great cost to both Allied forces and civilians. Air power had not yet the technology capable of striking with accuracy and impunity.

A decade on, similar failures were experienced during the Vietnam War. While there were many tactical successes delivered by air power, the 'numbers tell another story'; Operation *Rolling Thunder* involved '300,000 aircraft sorties to drop 600,000 tons of bombs at a cost 382 aircrew [KIA] and another 702 [MIA]. The U.S. lost 392 aircraft in 1968, 257 to ground fire, at a cost \$450 million in that year alone. The total number of combat aircraft lost was 900.'⁷ Ultimately, Operation *Rolling Thunder* failed to meet its objectives at heavy cost to both the U.S. and the Vietnamese. One of the main reasons for the failure of air power to meet its objectives was the defensive rather than offensive application of air power.⁸ This strategy was dictated by political objectives, however, arguably shows a misapplication of air power as the answer to end all wars. The other main cause was the military use of out-dated and ill-suited World War II strategic bombing doctrine which was based on the bombing of an industrialised nation such as Germany, and not tailored to suit the unique characteristics of Vietnam.⁹

4 Fielder, M. *The Air War, and British Bomber Crews, in World War Two*, BBC, 17 Feb 2011, http://www.bbc.co.uk/history/worldwars/wwtwo/air_war_bombers_01.shtml

5 *ibid*

6 *ibid*

7 Ellsworth, JK (COL – USAFR), *Operation Rolling Thunder: Strategic Implications of Air Power Doctrine*, 2003, U.S. Army War College, <http://www.dtic.mil/dtic/tr/fulltext/u2/a414074.pdf>, p 14

8 *ibid*

9 *ibid*, pp 16-19.

The failure of air power to live up to its promise may in part be attributed to the lack of serious study of theory in the first half of its existence.¹⁰ The aeroplane was seen as the ultimate machine, possibly the ultimate end-state in technology evolution as opposed to a means to the next evolution. As such, most early theory and doctrine centre around the aerodynamics of flight rather than its employment in conflict.¹¹ In the inter-war years and throughout World War II, the practicalities of strategic bombing, such as navigation and target acquisition, were not properly investigated.¹² Despite the Korean War and guerrilla insurgencies in Philippines, Malaysia and French Indochina, only two articles on air power were published by the USAF during the 1950s.¹³ The RAAF first Air-power Manual was not published until 1990 following the loss of its battlefield helicopters to the Army.¹⁴ Air Marshal R.G. Funnell stated air power had been a 'major intellectual problem' of which the consequence meant air power 'has been consistently undervalued' as an element of national military power.¹⁵ As Clausewitz remarked, 'so long as no acceptable theory, no intelligent analysis of war exists, routine methods will tend to take over even at the highest levels'.¹⁶

In recent times, the advancement of technology and development of supporting doctrine, have enabled air power's success in achieving strategic effects with virtual impunity. One of the most successful examples is Colonel Warden's air campaign in Operations Desert Shield and Storm. This campaign would utilise Warden's five ring model, a theory vastly developed from the interwar and World War II target selection theories as the 'industrial

10 Meilinger, *The Paths of Heaven: The Evolution of Air power Theory*, Maxwell Air Force Base Alabama: Air University Press, 1997, p xii.

11 *ibid*, p xii

12 Buckley, *Air Power in the Age of Total War*, p 78.

13 Meilinger, *The Paths of Heaven: The Evolution of Air power Theory*, p xxii

14 Stephens, A. *Power Plus Attitude: Ideas, Strategy and Doctrine in the Royal Australian Air Force 1921 – 1991*, Australian Government Publishing Service, Canberra, 1992, p 1.

15 *ibid*

16 von Clausewitz, *On War*, trans. Michael Howard and Peter Paret (Princeton, NJ.: Princeton University Press, 1976), p. 154.

web' and targeting of a population's will through its civilian centres.¹⁷ It prioritised targets based on Iraq's centre of gravities. The first objective of the campaign was to achieve air superiority by simultaneously targeting Iraqi 'air defence radar, SAM sites, AAA, and fighter-interceptors'¹⁸. 169 out of 298 strategic targets were struck in just the first two days of the campaign resulting in the cessation of Iraqi air operations.¹⁹ Air power's effectiveness had improved to the point where statistics were reported 'not of numbers of sorties per target killed, but rather of number of kills per combat sortie.'²⁰ Air power achieved the disruption of Iraqi C2, shutdown of 55 to 88 per cent of electricity production, destruction of 93 per cent of Iraq's oil refining capability, immobilisation of Saddam's elite Republican Guard and reduction of ground units to 50 per cent combat capability.²¹ The air campaign paralysed the Iraqi forces. This was achieved due to advances in precision-guided munitions (PGM), stealth, space, cruise missile and C2, combined with an air campaign designed specifically to attack Iraq's unique vulnerabilities. Moreover, significant improvements in air-power strategy and training resulted in '400 coalition fighters airborne and marshaled at night in radio silence, refueled often several times, and working under tight timelines without a missed tanker connection, let alone a midair collision'²². While air power provided the basis for victory, victory was achieved with the combined efforts of the land and naval forces.

Air-power roles such as lift and ISR, were for the first half of air power's existence, considered ancillary roles.²³ Early development of these other air-power roles was feared to divert much needed resources thus prolonging

17 Chun, C. *Aerospace Power in the Twenty-First Century: A Basic Primer*, Colorado and Alabama: Air University Press, 2001, pp. 66 & 99.

18 *ibid*, p. 111.

19 *ibid*, p. 114.

20 Lambeth, The Role of Air power going into the 21st Century, In *Emerging Threats, Force Structures, and the Role of Air Power in Korea*, edited by N Crawford & C Moon, 155, 122, 158. Washington DC: RAND, 2000, p. 118

21 Chun, *Aerospace Power in the Twenty-First Century: A Basic Primer*, p 117.

22 Lambeth, *The Role of Air power going into the 21st Century*, p. 122.

23 Chun, *Aerospace Power in the Twenty-First Century: A Basic Primer*, pp. 41-42.

the war.²⁴ Today's advancements in technology and doctrine mean that these other air-power roles are capable of achieving both lethal and non-lethal effects at a strategic level. For example, the Chinese established an ADIZ over the East China Sea, claiming the airspace as their sovereign territory despite contradiction from the international community.²⁵ Days later, the U.S. flew B52 bombers directly through the Chinese ADIZ²⁶, an action that sends a strategic message to the Chinese and international community. In this way, air power is able to achieve strategic effects in ways that the early theorists would not have been able to imagine.

Ultimately, the measure by which air power has transformed the strategies of war, across all domains and all spectrums of conflict, can be assessed by the extent it has altered the war-fighting paradigm of the international community. Air power has revolutionised national strategic policies, command and control systems, doctrine, industries, academic systems, laws, regulations, training and administration around the world.²⁷ While air power, properly applied to the required context, can form the basis for victory, it cannot achieve victory by itself. It is critical that resources be apportioned to continually develop theory and technology so that air power may continue to advance.

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24 Howard, *The Concept of Air Power: An Historical Appraisal*, *Air Power History* (Winter 1995), p. 9.

25 Starr, B & Botelho G. *Official: U.S. B-52s flew over China's controversial new air defense zone*, CNN, 27 Nov 2013, <https://edition.cnn.com/2013/11/26/world/asia/china-us-b52s/index.html>

26 *ibid*

27 Meilinger, *The Paths of Heaven: The Evolution of Air Power Theory*, p. xi.

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AIR POWER IN THE 21ST CENTURY

CAPTAIN JAMES MURDEN

ABSTRACT

Aviation was first employed in an era when military theorists were already grappling with seemingly revolutionary developments in artillery, naval warfare, and motorized transport; using aviation is now inseparable from the Western conception of modern warfare.¹ Writing in a time before the advent of effective ground-based air defences, the early air-power theorists concluded that aviation could overcome the fundamental advantage of the defence and advocated for its 'strategic employment' against the will and capacity of an enemy society to wage war. Classical theory promised air power would dominate future warfare as an independently decisive form of conflict, an assurance that continues to echo in military thought more than a century later.

This essay will examine the origins of the 'promise of air power' by introducing elements of classical and neo-classical air-power theory. Through considering the application of air power in the Greek Civil War and Operation *Desert Storm*, this essay argues that the belief that air power offers a fundamentally more strategic approach to applying force is flawed, but not lacking value. Indeed, while many of the predictions of the early theorists have proven only partially correct, air power is capable of achieving strategic effect both independently and in concert with other land- or sea-based forces. This essay concludes that the 'promise of air power' should be qualified by the geographical and political context of a conflict. There is, in sum, no one correct way of employing air power.

1 Mark A. Clodfelter, "Moulding Air power Convictions: Development and Legacy of William Mitchell's Strategic Thought", in Phillip S. Meilinger (ed.), *The Paths of Heaven: The Evolution of Air Power Theory*, Air University Press, Maxwell AFB, 1997, p. 88.

THE PROMISE OF AIR POWER

While it arguably took centuries of ground and naval warfare before the emergence of theorists whose contributions have had lasting relevance, the basic assertions of the air-power theorists writing immediately after World War I continue to echo in popular air-power thought.² Three theorists are notable, American William ‘Billy’ Mitchell, Englishman Hugh Trenchard, and Italian Giulio Douhet. Each attributed the carnage of that conflict to what Clausewitz had identified as the overwhelming advantage afforded a defensive force in battle, and reached similar conclusions. Unhampered by geographic boundaries and able to be massed unpredictably, air power could overcome the inherent advantage of the defence.³ To varying degrees each advocated employing air power in a ‘strategic’ role to strike targets beyond the front lines of battle, reasoning that their opponent’s centres of gravity to be their will and capacity to wage war rather than their fielded forces.⁴ Mitchell and Trenchard both advocated for employing tactical and strategic aviation, with the latter to be used to paralyse a nation through attacks on ‘vital centres’ of industry.⁵ Douhet reasoned that aviation should first be used to destroy opposing aerial forces before directly attacking the civilian population. Being physically destructive and psychologically terrifying, such bombing was intended to break the fragile will of the civilian population, thus reducing the duration so that net suffering was incurred (ie, compared to the attritional carnage of the first World War) and the opposing nation inevitably and subsequently surrendered.⁶ For varying reasons, each of the

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- 2 Phillip S. Meilinger, “Giulio Douhet and the Origins of Air power Theory”, in Meilinger (ed.), *The Paths of Heaven*, p. 34; cited in James Murden, “Air power Theory: Application of Air power”, essay submitted for the degree of Bachelor of Arts, 2011, unpublished.
 - 3 Murden, “Air power Theory”.
 - 4 We must assume they meant strategic effect, but misapplication and misunderstanding of this nuance is arguably to blame for much of the misapplication of air power in the intervening century. Alan Stephens, “The True Believers: Air power Between the Wars”, in Alan Stephens (ed.), *The War in the Air 1914-1994*, Air power Studies Centre, Fairbairn, 1994, p. 22.
 - 5 Phillip S. Meilinger, “Trenchard, Slessor, and Royal Air Force Doctrine before World War II”, in Meilinger (ed.), *The Paths of Heaven*, p. 5; cited in Murden, “Air power Theory”.
 - 6 Meilinger, “Giulio Douhet and the Origins of Air power Theory”, p. 15; cited in Murden, “Air power Theory”.

three theorists also advocated that the operation and command of air power from ground and naval forces should be independent.⁷

Three concepts formed the basis for early air-power theory: the primacy of the offence, the capacity of aviation to achieve strategic effect by striking at the will, and capacity of an opposing nation, and the requirement for operation divorced from (or at least given equal consideration and status to) ground and naval forces. In combination, they led Mitchell, Trenchard, and Douhet each to propose the 'promise of air power' according to their belief that air warfare would dominate future conflict because of its offensive superiority and ability to achieve decisive and independent strategic effect.⁸

FLAWED, BUT NOT INCORRECT

The early theorists were passionately committed to championing the role that air power could play, although they were writing at a time before their ideas could be effectively implemented. It is hardly surprising that their assertions of independent, strategic decisiveness have proven to be overstated. The primacy of the offence was challenged almost immediately with the advent of RADAR and effective ground-based air defences, which some have argued led to an essentially attritional battle for control of the skies during the Second World War.⁹ A century of experience further suggests air power is not fundamentally or uniquely capable of achieving strategic effect, although it is perhaps more suited to some geographic and political contexts

7 For Mitchell, an autonomous air command was best suited to defend the continental United States and fight an overseas enemy, rendering ground and naval operations secondary and subordinate. Trenchard regarded an independent air force as similarly essential for "strategic operations", while also able to be used as a cost and manpower-efficient substitute for other forces. For Douhet, freedom from ground commanders was an essential element in ensuring aerial forces were able to conduct their primary task - reducing enemy will and capability to fight. See: Clodfelter, "Moulding Air power Convictions", p. 79; and Meilinger, "Trenchard, Slessor, and Royal Air Force Doctrine", p. 72; cited in Murden, "Air power Theory".

8 David MacIsaac, "Voices from the Central Blue: The Air power Theorists", in Peter Paret, (ed.), *Makers of Modern Strategy*, Princeton University Press, New Jersey, 1986, p. 624.

9 Richard Overy, "The Air War in Europe, 1939-1945", in John Andreas Olsen (ed.), *A History of Air Warfare*, Potomac Books, Washington, 2010, pp. 50-52.

than others.¹⁰ This nuance is not captured in either early or ‘neoclassical’ theory. Each theory of air power claims to encompass all that *should* be done, but ultimately each is essentially a rigid targeting method devoid of context rather than an adaptive means of determining how best to apply air power to realise a political end state.¹¹ This is not to say that air power is *not* capable of achieving strategic effect either independently or in concert with other forces. However, as the examples below will discuss, employing air power must be tempered by the geographical and political context of a conflict.

THE GREEK CIVIL WAR

The Greek Civil War distinguishes utility of air power in a conflict that follows both irregular and conventional phases. While employing the Royal Hellenic Air Force (RHAF) was neither independent nor sought decisive strategic effect, air power nonetheless proved essential to Greek victory over communist guerrilla forces.¹² Air power was principally employed in interdiction missions targeting communist by combining independent armed reconnaissance and planned strikes, and close air support and airborne observation conducted in concert with the Greek army.¹³ During the initial years of the conflict, RHAF interdiction proved only marginally effective in independently impeding communist movement by day. However,

10 Robert A. Pape, “Beyond Strategic Bombing”, in *Bombing to Win: Air power and Coercion in War*, Cornell University Press, Ithaca, 1996, pp. 314-331.

11 It follows that air power intended to achieve strategic effect should provide a way of realizing a political end state, but the rigid application of such templates is often contrary to achieving strategic effect in circumstances that should be considered unique. In many conflicts, it also serves to detract from the important contributions made by the non-kinetic application of air power – such as the transport of personnel and supplies, evacuation of wounded, and airborne reconnaissance. See: Lara M. Dadkhah, “Close Air Support and Civilian Casualties in Afghanistan”, in *Small Wars Journal*, viewed 25 Aug 18, available at www.smallwarsjournal.com; and Colin S. Gray, “Understanding Air power: Bonfire of the Fallacies”, in *Strategic Studies Quarterly* Winter 2008, p. 63.

12 Norman J. Brozenick, Jr., “Small Wars, Big Stakes: Coercion, Persuasion, and Air power in Counterrevolutionary War”, thesis submitted to the School of Advanced Air power Studies, Air University, Alabama, 1998, pp. 63-65.

13 J.C. Murray, “The Anti-Bandit War”, in T.N. Greene (ed.), *The Guerilla and How to Fight Him*, Frederick A. Praeger New York, 1962, pp. 106-108; cited in Brozenick, “Small Wars, Big Stakes”, p. 64.

non-kinetic applications of air power are noteworthy, including supply drops, mail delivery, evacuation of wounded personnel, and leaflet distribution.¹⁴ The critical importance of these non-kinetic applications is not addressed by the ‘promise’ of air power.¹⁵ In the last phase of the conflict, communist forces adopted more conventional tactics that proved vulnerable particularly to RHAF close air support.

The Greek employment of air power was heavily shaped by British and American advice, but is not similar to the independent air campaigns advocated by the air-power theory of the time. Rather than an independent airborne campaign aiming to achieve coercion through causing devastating cost, threatening increasing damage, or destroying crucial elements of infrastructure; RHAF operations focused on the interdiction of communist forces.¹⁶ Air power was constrained by political considerations: attacks within five miles of international borders were banned for fear of justifying formal support for communists.¹⁷ While literature addressing the conflict commonly refers to air power as a ‘supporting’ force, it provided an essential contribution; achieving both persuasive and coercive effects in support of a political end state as part of a strategy that acknowledged the uniqueness of the Greek Civil War.¹⁸

14 Amikam Nachmani, “Civil War and Foreign Intervention in Greece: 1946-49”, *Journal of Contemporary History* 25:4, 1990, p. 508.

15 Eliot A. Cohen, “The Meaning and Future of Air Power”, in *Orbis* Spring, 1995, pp. 190-191.

16 Ironically, Britain had extensive experience employing air power in small wars – having adopted air power as a means of keeping peace and establishing order during the interwar years in Somaliland, Morocco, and Syria. It appears the post-war focus on “strategic aviation” was strong enough that the tactical impact of aircraft in both conventional and irregular warfare (in both the direct and indirect application of force) was forgotten. See: John H. Morrow Jr., “The First World War, 1914-1919”, in Olsen (ed.), *A History of Air Warfare*, pp. 24-25; and J.S. Corum, W.R. Johnson, *Air power in Small Wars: Fighting Insurgents and Terrorists*, University Press of Kansas, Lawrence, 2003, p. 81.

17 Brozenick, “Small Wars, Big Stakes”, p. 63.

18 Christina J.M. Goulter, “The Greek Civil War: A National Army’s Counter-insurgency Triumph”, in *The Journal of Military History* 78, 2014, p. 1026.

OPERATION DESERT STORM

The employment of air power in Operation *Desert Storm*, particularly the independent campaign waged prior to the ‘100 hour ground war’, is commonly considered to vindicate the idea of decisive, strategic air power first promised a century earlier.¹⁹ While the argument about the primacy of ground or air (or naval) forces is not the subject of this essay, it must be noted that ground forces were still required to achieve an acceptable political end state. This occurred despite there being favourable geography (for obvious reasons, the desert has consistently proved an amenable environment for air to ground targeting), and the Iraqi army electing to employ ‘conventional’ tactics (against which coalition air power was both designed and trained to defeat).²⁰

In Desert Storm, air power was employed in accordance with the ‘neoclassical’ air-power theory developed by Colonel John Warden, who was provided a very public opportunity to put his ideas into practice.²¹ Warden advocated both for parallel operations to achieve a (decisive) decapitating strike, with the first six days of the 43-day campaign broadly following a format whereby the Iraqi leadership was isolated and targeted directly.²² Precision guided munitions (PGMs) proved exceptionally capable of striking the Iraqi leadership with over two-thirds of the planned targets being struck in the first three days of the campaign. However, but contrary to both classical and neoclassical theories there was neither no coup or popular uprising demanding that the Iraqi leadership seek peace, nor the Iraqi

19 See discussion in: Lewis Ware, “Ware on Warden: some observations of The Enemy as a System”, in *Air power Journal* 9:4, 1997, pp. 87-93.

20 Clodfelter, “A Strategy Based on Faith: The Enduring Appeal of Progressive American Air power”, in *Joint Forces Quarterly* 49, 2008, pp. 150-151. Whether air power should be subordinate to land or ground power is an essentially false argument that overlooks the reality that all military action is focused on ultimately achieving ground-based effects. For discussion see: Gray, “Understanding Air power”, pp. 57-61.

21 Colonel Warden was the deputy director of Project Checkmate, a planning division within the United States Air Force Air Staff. His theory of air power is best laid out in: John A. Warden III, “The Enemy as a System”, in *Air power Journal* 11:1, 1995, pp. 41-55.

22 Robert A. Pape, “Iraq, 1991”, in *Bombing to Win*, pp. 228–229.

leadership ceasing to function.²³ Moreover, analysis suggests that the success of air power in this conflict owes more to its effectiveness in the interdiction of Iraqi forces with both PGMs and conventional ‘dumb’ bombs in the weeks that followed.²⁴ This is not to say that air power did not achieve strategic effect—the massive amount of ordnance dropped on Iraqi troops led to mass desertion—but even with near perfect implementation the approach did not achieve the decisive effect it *should* have.²⁵

CONCLUSION

While it may seem a tautology, experience suggests that the more a conflict suits the employment of air power, the more likely it is that air power will decide which combatant emerges victorious.²⁶ Because air power is a characteristically Western method of waging war, this likelihood has typically equated to the more conventional and symmetrical a conflict, the more likely air power is to decide the outcome, an assessment supported by both case studies considered above. The experience of the Greek Civil War (and any number of small and irregular conflicts fought in the past century) also suggests there is a vital role for air power in that type of conflict, though it may not necessarily be in striking ground based targets.

This essay has examined the origins of the ‘promise of air power’ and introduced its central argument: that air warfare will dominate conflict

23 Clodfelter, “A Strategy Based on Faith”, p. 151.

24 Eliot A. Cohen, “The Mystique of US Air Power”, in *Foreign Affairs* 73:1, 1994, p. 110.

25 Robert A. Pape, “The True Worth of Air power”, in *Foreign Affairs* 83:2, 2004, p. 121, cited in Clodfelter, “A Strategy Based on Faith”, p. 151.

26 Two case studies are a particularly small sample, but it is noteworthy that in both the Greek Civil War and in Operation *Desert Storm* the opposing forces proved move vulnerable to kinetic air power after adopting what the West would consider conventional tactics. This is hardly surprising – the tactics employed in “irregular” conflict are specifically intended to prevent or limit the employment of major strengths (like air power). It is noteworthy that while Western forces in Iraq were essentially designed and intended to fight in that kind of conflict, the air power employed in Greece was generally not designed or well equipped to conduct the missions they did. For further discussion, see: Gray, “Understanding Air power”, pp. 51-52; and Robyn Read, “Irregular Warfare and the US Air Force: The Way Ahead”, in *Air and Space Power Journal* 21:4, 2007, p. 42-44.

because of its offensive superiority and ability to achieve decisive and independent strategic effect. Despite passionate declarations to the contrary, independent air forces have not proved to be any more especially or fundamentally decisive or strategic than ground or sea-focused forces.²⁷ Through briefly considering the employment of air power in the Greek Civil War and Operation *Desert Storm*, this essay has argued that, while air power is certainly capable of achieving strategic effect, its actions must be governed by the unique context of a conflict, rather than rigid adherence to an approach promising victory by threatening or causing devastating cost, destroying critical elements of infrastructure, interdicting fielded forces, or directly targeting leadership.²⁸ This essay arrives at two conclusions: first, that air power is essential and capable of determining which combatant will emerge victorious in both conventional and small or irregular conflicts; and second, that the ‘promise of air power’ should be qualified by the geographical and political context of that conflict. There is, in sum, no one correct way of employing air power.

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27 Gray argues these assertions have tended to misunderstand that it is the consequence of military action rather than the force conducting the action that has strategic effect. See: *ibid*, pp. 50-51.

28 Each of these possible strategies of employing air power are explored by Pape in: “Coercive Air Power”, in *Bombing to Win*, pp. 55-86.

THE RHODESIAN COUNTER-INSURGENCY AND THE SOVIET'S IN AFGHANISTAN

AN ANALYSIS OF AIR-POWER APPLICATION AGAINST THE EARLY AIR-POWER DOCTRINE

SQUADRON LEADER JAY NICKS

INTRODUCTION

There is no doubt that air power is a critical element of military power and one often sought as a first response by politicians to apply pressure to other states. Air power is often seen as a relatively safe military option, resulting in less enemy and friendly casualties than operations conducted by land forces alone. The early air-power theorists promised that proper application of air power would ensure a speedy end to conflict and would see those with the air advantage achieve their military objectives, and therefore their political objectives with great efficiency. In the case of counter-insurgency operations, air power has been used in numerous historical examples as both a supporting and main effort.

This essay will discuss to what extent the promises made by the early air-power theorists have been realised in the context of counter-insurgency operations, particularly the Soviet campaign in Afghanistan and the Rhodesian counter-insurgency. It will briefly explore the promises of a selection of the air-power theorists and then analyse the use of air power in the two aforementioned conflicts.

THE PROMISE OF AIR POWER

Guilo Douhet recognised early, the potential effects that air power could have in conflict. He proposed that command of the air was key and that the sky was an important third domain to war.¹ He argued for the purely

1 Meilinger, The School of Advanced Air Power Studies, *The Paths of Heaven*, p. 2.

offensive use of aircraft to bypass ground forces², achieve surprise and strike deep into enemy territory, eroding the will of the people.³ Douhet promised that the requirement to destroy an enemy's land army was now obsolete and further, that this would minimise casualties and losses to materiel.⁴ Douhet's work demonstrates that he saw air power as the determining factor in conflict. To him, command of the air meant winning the war⁵ as it allowed for an extensive bombing campaign to force the civilian population to pressure the government to capitulate.⁶ Billy Mitchell continued Douhet's line of thinking; however, notes that air power is an effective tool for the destruction of the enemy's military capability.⁷ Hugh Trenchard refined Douhet's concepts in early RAF air-power doctrine, when proposing the aircraft could attack economic centres of gravity, thus breaking the morale of the population.⁸

Further refining the application of air power is John Warden's Five Rings Model. The model proposes that the enemy leadership is at the centre and therefore the 'most critical for the functioning of a state.' Warden's model offers that the enemy fielded forces are on the outside of the rings and therefore the least crucial to victory.⁹ Noting that effects on any of the five rings will have impacts on the others, Warden's intended end state for application of the model was strategic paralysis of an enemy and therefore, victory through air power.¹⁰

While volumes can be written analysing the early air-power doctrine, there are some common themes from the theorists; air power is primarily

2 Meilinger, *The School of Advanced Air Power Studies*, p. 9.

3 Smith, *The Strategists*, p. 68.

4 Meilinger, *The School of Advanced Air Power Studies*, *The Paths of Heaven*, 11.

5 Meilinger, *The School of Advanced Air Power Studies*, *The Paths of Heaven*, 16.

6 Paret, Craig, and Gilbert, *Makers of Modern Strategy from Machiavelli to the Nuclear Age*, 630.

7 Earle, Craig, and Gilbert, *Makers of Modern Strategy*, 498.

8 Meilinger, *The School of Advanced Air Power Studies*, *The Paths of Heaven*, 41–42.

9 Warden, "The Enemy as a System."

10 Meilinger, *The School of Advanced Air Power Studies*, *The Paths of Heaven*, 357.

offensive. It offers an ability to strike deep within enemy territory and can bring destructive power at the strategic level in order to win wars.

THE SOVIETS IN AFGHANISTAN

After a stunning air insertion in 1979 that highlighted the speed and reach of air power, the Soviets quickly found themselves engaged in a protracted counter-insurgency operation in Afghanistan using equipment and tactics designed for fighting NATO in Western Europe.¹¹ While the Soviets faced no air threat from the Mujahidin, they did not enjoy air operations unhindered by surface to air threats such as rocket propelled grenade and machine gun fire¹² and later in the campaign, the Stinger missile.

Realising that the Mujahidin relied on logistical support from the civilian population, an 'Organic Essential' in Warden's Five Ring Model, the Soviets used air power to strike rural areas, infrastructure other support nodes.^{13,14} Initially successful, these tactics forced the Mujahidin to rely on logistical support from Iran and Pakistan¹⁵ before establishing support hubs in less-accessible areas of the country.¹⁶ While applying air power in the attack role was incredibly effective in a destructive sense, it failed to recognise the fundamental aspect of counter-insurgency operations that provided security for the population.¹⁷ Ruthlessly applying force in Afghanistan caused up to eight million Afghans to be displaced,¹⁸ many returning to fight against the Soviets. The amount of devastation inflicted on the Afghan population, often used as retaliation following an attack by the Mujahidin, can be linked to Douhet's principle: to erode the will of the people.

11 Ali et al., *The Case for Withdrawal from Afghanistan*, 15.

12 Dick and Conflict Studies Research Centre (Great Britain), *Mujahideen Tactics in the Soviet-Afghan War*, 12.

13 Grau and Jalali, "The Campaign for the Caves: The Battles for Zhawar in the Soviet-Afghan War," 70.

14 Cordesman and Wagner, *The Lessons Of Modern War*, 129.

15 Dick and Conflict Studies Research Centre (Great Britain), *Mujahideen Tactics in the Soviet-Afghan War*, 6.

16 Grau, "The Soviet-Afghan War: A Superpower Mired in the Mountains," 140.

17 *Joint Doctrine Publication 0-30 UK Air and Space Doctrine*, xiii.

18 Grau, "The Soviet-Afghan War: A Superpower Mired in the Mountains," 135.

From a study of the Soviet experience in Afghanistan, the promises of air power were clearly not fulfilled in this case. Despite achieving tactical superiority in all engagements with the Mujahidin and never losing a fixed position,¹⁹ the Soviets were unsuccessful in defeating the insurgency and their withdrawal from Afghanistan was completed on the 15 February 1989.²⁰ Attacking the insurgents' logistical support base did not have a lasting effect on Mujahidin operations. Indiscriminate and retaliatory bombing designed to break the will of the people only served to strengthen it and turned even more Afghans against the Soviets.

THE RHODESIAN COUNTER-INSURGENCY

The insurgency in Rhodesia following the Unilateral Declaration of Independence saw an almost 15-year struggle between the African Nationalists and the Rhodesian security forces. The belligerent forces in Rhodesia operated with the general support of population: they sought sanctuary in neighbouring states, blended with the locals, wore civilian clothing and concealed weapons.²¹

The Rhodesian armed forces sought to counter the insurgent's freedom of movement through cross-border raids²², targeting various border crossing points and recognising the need to take the fight to them in the rural areas of the country. They conducted special operations missions by observing movement corridors and villages and infiltrating the insurgent networks by using Selous Scouts and conducting of Psudo operations.²³ Once identified, insurgents were targeted primarily through air-mobile ground forces and ground attack missions from the air. Overhead C2 coordinated the positioning of blocking forces as required, by combining aerial fire support and small ground forces that were inserted by air to cut off fleeing insurgents.

19 Braithwaite, *Afgantsy*, 145.

20 Kalinovsky, *A Long Goodbye*, chap. 6.

21 Arbuckle, "Rhodesian Bush War Strategies and Tactics: An Assessment," 29.

22 Arbuckle, 32.

23 Cilliers, *Counter-Insurgency in Rhodesia (RLE)*, 124.

The Rhodesian forces had great success using these tactics, and thus enjoyed a favourable ratio of enemy killed in action against friendly casualties.²⁴

Of note throughout the Rhodesian campaign was the lack of attention to anything other than the enemy logistical support and their fielded forces. Because of the insurgent makeup, the leadership could not be targeted and noting the wider political situation, widespread bombing was not an option. The Rhodesian security forces did not follow prescribed air-power doctrine choosing rather to adapt tactics to the situation. Of note was the successes in coordinating air power, with Air Force officers at every level of planning from the cabinet level to the various joint operations centres.²⁵ This level of Air Force involvement in planning and decision making was something espoused by the early air-power theorists. Rhodesia's Air Force was also involved with dynamic tactical coordination during firefights, so that the effect on the battlefield was truly joint in nature.

From a study of the Rhodesian security force's use of air power in the Rhodesian campaign, it is clear that they did not prescriptively follow the theories of the fathers of air power. They approached the insurgency in a tactical fashion, relying on adapting tactics and equipment, special forces and being flexibility in their response. Ultimately, they were unsuccessful in their counter-insurgency campaign after failing to achieve the broader strategic effects required for victory.²⁶

CONCLUSION

The early air-power theorists promised to relatively easily conclude conflict by dominating in the air and then forcing the opposing state to yield through pressure applied from strategic bombing effects. These strategic strikes would be directed at the civilian population to break their will or at one or more of the enemy centres of gravity, focussing on the enemy command and control as a priority.

24 Cilliers, 22.

25 Cilliers, chap. 2.

26 Abbott and Botham, *Modern African Wars (I)*, 13.

These concepts were intended to be applied in state-on-state, conventional conflicts against enemy forces who relied upon civilian infrastructure with easily identifiable and targetable fielded forces on the battlefield. As the Soviets and Rhodesians discovered, these theories are less successful against an insurgency who can blend into the local population, does not require sophisticated equipment or support, and are supported by the local populace. Further, Soviet attempts to punish the Afghan civilian population only sought to strengthen their resolve and encourage them to join the insurgency. The Rhodesians were significantly more measured in applying offensive air power in an attempt to avoid this, but, like the Soviets, they were unsuccessful in their counter-insurgency campaign.

The early air-power theories, when applied to the Soviet-Afghan and Rhodesian campaigns, did not realise the promises of air power. These theories require judgment and flexibility in their application. The promises of air power made by the early theorists are entirely valid but only in specific circumstances. Although the Soviets and Rhodesians enjoyed air superiority and could conduct air operations with relative impunity, they did not decide either conflict.

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AIR POWER IN THE 21ST CENTURY

CAPTAIN PIETRO RUGGERI

The Soviet military intervention in Afghanistan from 1979 to 1989 was characterised by the failure of overwhelming firepower and combat superiority in the face of guerrilla warfighting. Air power was no exception, with air supremacy not nearly enough to undermine an insurgency built on the radical instilled in a tribal and robust people. To appreciate the Soviet concept of the 'promise of air power', it is necessary to compare it from a Western perception. This will explain the means by which the Soviets applied aircraft in the core roles of mobility and strike, and intelligence, surveillance and reconnaissance (ISR). Although the Soviets experienced tactical successes in employing air power, it was the operational failures that proved their efforts futile. Assessing their inability to achieve the commander's intent to dominate the air domain will draw conclusions about improving air power in counterinsurgency campaigns.

The Soviet air force of 1979 was both doctrinally and strategically designed for waging war across the plains of Europe. Although this enabled the Soviets to rapidly invade Afghanistan by forces intended to seize European airports and arterial routes, their later application in counterinsurgent warfare demonstrated a force 'in no way prepared for a counterinsurgency effort in mountainous terrain.'¹ Air power was a concept driven by the Soviet experience of World War II, in which air forces were fundamentally employed to enable large-scale ground manoeuvre. To achieve this, air assets were centrally controlled and often seconded to ground force commanders. Despite the supporting role of air power, Soviet doctrine did not preach integration between strike and mobility aircraft, nor air-land integration at the tactical level.² This restricted flexibility and undermined operational initiative in applying air power against an insurgent enemy force.

1 Robert Sutley, "The Soviet's use of Air power in a Counterinsurgency Campaign" (Student Report, Air Command and Staff College Air University, 1987), p. 8.

2 Ibid, p. 14.

Comparatively, modern Western concepts of air power have developed in stark contrast to the rigidity of Soviet doctrine. Whereas the USSR viewed air power simply as a warfighting function, the Royal Australian Air Force, for example, identifies it as applying military power within the air domain and contributing significantly to national security.³ This reflects American doctrine, with the United States Air Force defining air power as ‘the ability to project military power or influence through the control and exploitation of air, space, and cyberspace to achieve strategic, operational, or tactical objectives.’⁴ These definitions indicate the holistic and national strategic approach the West has taken to air power. Although developed with the hindsight of twentieth century limited wars, these contemporary perceptions provide a critique with which to judge the success of Soviet air power in applying mobility, strike, and ISR in Afghanistan.

Air mobility was a developing concept when the Soviets launched their invasion of Afghanistan during Christmas, 1979. Although inexperienced in its application, the Soviets learned and employed key lessons in air-land manoeuvrability. Where they certainly succeeded, however, was the inter-theatre transportation of men and materiel. It took three days and approximately 250-300 sorties to transport the 105th Airborne Guards Division, including their vehicles and supplies, from the USSR to Kabul Airport.⁵ The Soviets used Antonov-12 and Antonov-22 transport planes to airlift the division,⁶ who subsequently begun to seize key infrastructure. This demonstrates Soviet capacity to surge mobility platforms for mass force insertion, a trend they continued at a reduced rate throughout the conflict. This differed from intra-theatre mobility, which was initially fulfilled by armoured fighting vehicles. The early Soviet force of seven motor rifle divisions was large and logistically cumbersome. Manoeuvring armoured

3 Royal Australian Air Force, *AAP1000-D – The Air Power Manual*, 6th edn, (Canberra: Air Power Development Centre, 2013), p. 13.

4 United States Air Force, *Air Force Basic Doctrine*, (Maxwell AFB: Lemay Centre for Doctrine, 2015)

5 Joseph Collins, “Soviet Military Performance in Afghanistan: A Preliminary Assessment,” *Comparative Strategy* 4, no. 2, (1983): p. 153.

6 Mark Heller, “The Soviet Invasion of Afghanistan,” *The Washington Quarterly* 3, no. 3, (Summer 1980): 40.

vehicles against Mujahedeen operating in rural or mountainous terrain was impractical, leaving the Soviets to rely on rotary-wing transports. This force restructure became evident in 1981 when the number of tanks reduced from 1000 to 300 while helicopters rose from 60 to 300.⁷ By employing helicopters for both transport and firepower, Soviet forces were able to conduct interdiction and vertical envelopment against insurgents. This undermined Mujahedeen mobility and led to increased Soviet operational success. The increase of insurgent Stinger anti-aircraft missiles, however, restored balance and again restricted Soviet intra-theatre mobility.⁸

Robert Sutley determines that the Su-25 Frogfoot and Mi-24 Hind is the most capable and liberally applied Soviet strike aircraft in Afghanistan. The Frogfoot, a single-seat jet-engine attack aircraft, was a developing close air support platform, reaching maturity in the latter years of conflict. The Hind was used as a multi-role transport-attack helicopter gunship, capable of providing fire support and transporting eight passengers.⁹ Sutley assesses helicopters as ‘undoubtedly the most important air asset in the fight against insurgents’¹⁰ owing to their flexibility and versatility in employment. In combat, the Soviets would call upon strike aircraft to support forces in the fight, destroy prepared enemy positions, or provide overwatch of advancing units. In his recount of an assault on an enemy position in Herat in 1984, former USSR Army Major, VM Bogdashkin details the necessity to request close air support from Frogfoots against Mujahedeen positions to enable his company’s manoeuvre.¹¹ Strikes would not always be applied with precision or discrimination; it was common to launch air attacks to prepare for clearing or blocking operations. The Soviets did not care much for the Afghan population and believed it appropriate to employ air delivered

7 Stephen Blank, “Airmobile troops and Soviet Airland war: From Afghanistan to the future,” *The Journal of Soviet Military Studies* 5, no. 1, (March 1992): p. 30.

8 Ibid, p. 37.

9 Sutley, “The Soviet’s use of Air power in a Counterinsurgency Campaign,” pp. 12-13.

10 Ibid, p. 13.

11 V.M. Bogdashkin, “Assault of the outskirts of Herat,” in *The Bear Went Over the Mountain: Soviet Combat Tactics in Afghanistan*, trans. and ed. Lester Grau, (Washington: National Defense University Press, 1996), p. 49.

weapons wherever they deemed necessary to enable combat operations.¹² This adversely affected population support, turning locals into guerrillas. In lessons learned from Soviet counterinsurgency operations, Lester Grau determined that 'air domination is irrelevant unless precisely targeted',¹³ being that tactical air power is misused when not strategically applied.

Air supremacy also allowed the Soviets to exploit altitude for ISR. Among their roles of mobility and firepower, helicopters were also employed for aerial reconnaissance. This allowed a manoeuvre commander to use helicopters as reconnaissance strike systems capable of providing real-time intelligence while also controlling fires.¹⁴ Fixed-wing aircraft could also achieve this function, such as using converted Antonov-12 transports for reconnaissance and target designation during operations in the Panjshir Valley in 1982. This proved an effective means of aerial ISR, enabling Su-25s to strike targets of opportunity that ground forces would otherwise not unobserved.¹⁵ This was commonly a tactical success; operationally the Soviets often failed to follow up target acquisition with timely strikes, preferring to conduct air attacks only where ground operations were occurring.¹⁶ The Mujahedeen then adapted their tactics and logistical procedures to counter Soviet aerial ISR. By developing an intricate system based on decentralised and dispersed logistical support, they mitigated the Soviets' ability to identify clusters of activity or operational patterns.¹⁷ Dedicated operational and strategic reconnaissance assets have since been developed to undermine covert insurgent operations. The Soviets, however, only effectively tasked aircraft with ISR to support tactical objectives.

12 See Lt Col Uri Ludzky's description of common tactical procedures in Geoff Shaw and David Spencer, "Fighting in Afghanistan: Lessons from the Soviet intervention, 1979-89," *Defence and Security Analysis* 19, no 2 (2003): p. 185.

13 Lester Grau, "The Soviet-Afghan War: A Superpower Mired in the Mountains," *Journal of Slavic Military Studies* 17, no. 1, (2004): p. 149.

14 Stephen Blank, "Afghanistan and beyond: Reflections on the future of warfare," *Small Wars & Insurgencies* 3, no. 3, (Winter 1992): p. 227-228.

15 Edward Westermann, "The Limits of Soviet Air power: The Failure of Military Coercion in Afghanistan, 1979-89," *The Journal of Conflict Studies* 19, no. 2, (Fall 1999): 7.

16 Blank, "Afghanistan and beyond," p. 230.

17 Irfan Ahmad, "Role of Air power for Counterinsurgency in Afghanistan and Federally Administered Tribal Areas" (Thesis, Naval Postgraduate School, 2001), pp. 33-34.

Air power should be employed as a strategic means of achieving politico-military objectives. Key theorists, such as John Warden, argue that air superiority is the minimum level of air control required to be successful in armed conflict.¹⁸ He also suggests that this would need to be incorporated into an air campaign, defined by the RAAF as 'the controlled conduct of one or more air-power operations in support of the joint campaign.'¹⁹ The Soviets did control the air in Afghanistan, and although Stinger missiles reduced the tactical employment of aircraft, Soviet air forces never faced serious opposition. Despite this advantage, the Soviets failed to appropriately apply air power to achieve their operational commanders intent, a shortfall reflecting American counterinsurgent operations in Vietnam.²⁰ Their misuse of air power was caused by a focus on tactical application rather than strategic effects, evidence of an inability to appreciate the complex relationship between kinetic action and population support.

Marcel De Haas, in *Russian Security and Air Power, 1992-2002*, discusses the development of Russian air power in the post-USSR period. He determines that the Soviets identified weaknesses in their rigid employment of aircraft, with pilots and unit commanders generating flexibly adaptive tactics to combat the unconventional Mujahedeen.²¹ They did, for example, develop the Combined Arms Rifle Battalion; a 'unit created by adding specialized units, engineer, air, airborne, and air defence into a standard Motorized Rifle Battalion, depending on its mission and terrain of operations.'²² These developments, however, failed to approach air power strategically because aircraft were continuing employed in a way that could not undermine an insurgency. This mirrored overall Soviet operations in Afghanistan, where the strategic intent remained ambiguous.

Air power had promised that the Soviets could operationally dominate their enemy. While this was achieved in the initial invasion, air power failed

18 John Warden, *The Air Campaign: Planning for Combat*, (Washington: Pergamon-Brassey's, 2000), 10.

19 RAAF, *The Air Power Manual*, pp. 188-189.

20 Sutley, "The Soviet's use of Air power in a Counterinsurgency Campaign," p. 16.

21 Marcel De Haas, *Russian Security and Air Power, 1992-2002*, (Frank Cass: London, 2004), p. 122.

22 Blank, "Airmobile troops and Soviet Airland war," p. 32.

to guarantee success in subsequent counterinsurgency operations. Soviet concepts of air power were the root cause for this because the centralised tactical application of aircraft was emphasised. Although it took time for intra-theatre air mobility procedures to reach the standard for success, the growing number of insurgent Stinger missiles often mitigated air mobile operations. The Soviet use of strike aircraft also improved, although the strategic ramifications of their tactical application strengthened the insurgency's cause. ISR capability then failed to enable the strategic success of air power by not appropriately identifying and prosecuting targets. The Soviets' inability to achieve their operational commander's intent resulted from their misusing air supremacy and failing to appreciate air power's strategic utility. The Soviet military intervention in Afghanistan has improved Western understanding of air power in limited wars and counterinsurgencies by demonstrating that a tactical focus may not realise the strategic promise of air power.

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AIR POWER IN THE 21ST CENTURY

MAJOR ASHLEY ZIMMERLIE

Early air-power theorists appeared to promise a new means of prosecuting war, and most had endured previous experience in warfare during the World War I as they formulated their ideas. During the interwar years, the still-developing core ideas that united some of the key 'classical' theorists involved several themes. First, for many advocates, the most significant theme was that strategic bombing appeared to offer an innovative and decisive means of waging war, possibly to the extent that would nullify the need for land or maritime battle. Secondly, recollecting the horrors of the Great War, optimism grew that strategic air power would bring rapid conclusion to war and break any deadlock such as that endured in the trenches of Western Europe.¹ This brief essay will explore these themes as espoused by three of the most important early air-power theorists and advocates of offensive strategic air power. It will then discuss to what extent the 'promise' of strategic air power was realised through the lens of the Allied bombing campaign in Western Europe during World War II.

The roots of 'strategic bombing' theory lay before the World War I in debates about how air power should be employed, whether in conjunction with land and maritime forces, or in a strategic role, or by bombing adversaries in a separate and autarchic manner. The concept of direct attacks on civilians had been explored by HG Wells even before the means to achieve it existed.² Dr Alan Stephens argued that the three most important interwar 'classical' air-power theorists were Englishman, Sir Hugh Trenchard, American, William 'Billy' Mitchell, and Italian, Giulio Douhet.³ It is

1 John Buckley, *Air Power in the Age of Total War* (Indianapolis: Indiana University Press, 1999), p. 71.

2 Herbert George Wells, *The War in the Air* (1908) and *The Shape of Things to Come* (1933).

3 Alan Stephens, 'The True Believers: Air power between the Wars.' in Alan Stephens (ed.), *The War in the Air 1914-1994* (Maxwell Air Force Base: Air University Press, 2001), p. 48.

worth briefly examining the key ideas of all three to appreciate the prophetic 'promise of air power'.

Sir Hugh Trenchard, who would become the Chief of Air Staff (CAS) in 1918, argued for the psychological effects of bombing from physical destruction, which the Germans had aimed to achieve in Zeppelin attacks over London in 1915. While these attacks were modest in impact and did little to affect productivity, they nonetheless excited but terrorised the British population and government, instilling a sense of vulnerability for an island nation that had been protected by its natural moat for centuries. Trenchard's slow journey into air-power advocacy came to be defined by several tenets: that air superiority was an essential pre-requisite to military success, that air power was an inherently offensive weapon, and that, although air power's material effects were great, its psychological impact was greater.⁴ His ideas about the 'will' of the enemy came to shape RAF doctrine. According to Meilinger, he believed that the airplane, 'employed in mass, was an inherently strategic weapon that was unmatched in its ability to shatter the will of an enemy country.'⁵ This opinion was shared by his American counterpart, Brigadier-General Billy Mitchell.

Critical to Mitchell's belief in the inevitable dominance of air power through offensive action was his perception of the continually increasing technical superiority of aircraft, and the fragility of 'civilian morale'. Mitchell saw strategic bombing as a 'civilising instrument', writing in 1930 that '[bombardment] is a distinct move for the betterment of civilisation...it is a quick way of deciding a war and really more humane.'⁶ This view echoed an earlier theory espoused by Giulio Douhet, though there is little evidence to suggest that Mitchell knew of Douhet's writings.⁷

4 Phillip S Meilinger, 'Trenchard and "Morale Bombing": the Evolution of Royal Air Force Doctrine before World War II', in *The Journal of Military History*, Vol. 60, No. 2, (Apr 1996), p. 255.

5 Meilinger, *Ibid*, p. 244.

6 Alan Stephens, *The War in the Air*, 54, quoted in Phillip S. Meilinger, 'Global Air Power and Power Projection', in *RUSI's and Brassey's Defence Yearbook 1992* (London: Brassey's, 1992), p. 195.

7 Alan J. Levine, *The Strategic Bombing of Germany 1940-1945* (London: Praeger, 1992), p. 12.

Heavily influenced by the horrors of trench warfare, and specifically the Italian disaster at Caporetto, Douhet repeatedly advocated that aircraft would end trench stalemates.⁸ In Douhet's view, air power could break a people's will by destroying a nation's 'vital centres'—those key governmental, societal and industrial elements critical to the functioning of a state. Simply equating the destruction of an enemy's army to victory in war had proved disastrous in World War II. Douhet advocated circumventing an army entirely and striking rather at an enemy's will to fight.⁹ Importantly, he did not distinguish between civilians and combatants for, in total war where entire nation-states confront each other, their civilian populations are legitimate targets. Comparable to the 'necessity' of nuclear strategy in the Cold War, he advocated using poison gas and incendiary munitions to target the national-strategic willpower of a foe, thus rapidly concluding war.¹⁰

The ideas that linked these three influential theorists was that civilian morale was fragile and national infrastructure was vulnerable to massed attack from the air. They all expected that future warfare would be dominated by offensive air power in the form of strategic bombing, and that it could be the sole determining factor in the outcome of a conflict.¹¹ Whether the terror from strikes on civilian populations was real or perceived, experience in the interwar years seemed to support the theory and the rapidly advancing technologies.

Evidence of the assumed effects of 'terror bombing' was seen during several highly-publicised attacks in the interwar conflicts, including the Italian Air Force bombing Ethiopian towns, caravans and military targets, thus killing many civilians.¹² Japanese air forces bombed Chinese population centres during the Sino-Japanese war and, in an infamous case, the Luftwaffe bombed the Basque city of Guernica in 1937 to support nationalist forces. Yet while horrific, these attacks bore little resemblance to the fully-developed

8 Phillip S Meilinger, "Chapter 1: Giulio Douhet and the Origins of Air power Theory" in P. Meilinger (Ed), *The Paths Of Heaven: The Evolution of Air Power Theory* (Alabama: Air University Press, 1997), p. 9.

9 Meilinger, *Ibid*, p. 11.

10 Buckley, *Air Power*, p. 74.

11 Stephens, *The War in the Air*, p. 48.

12 Stephens, *Ibid*, p. 60.

theory of strategic bombing, and were in practice often tactical in their objectives. Nonetheless, the evidence of the Guernica bombings reinforced a sense of British self-consciousness and vulnerability, thus highlighting their tenuous geo-strategic position.¹³ Guernica appeared to emphasize the impact on the civilian population and the level of destruction that air power could generate. Britain placed great faith in the bomber during the re-armament period based on this perception. It was a plan of deterrence which shaped national strategy as Europe lurched into the Second World War.

The Allies conceived several strategies for defeating Germany in Europe, all relying heavily on strategic air power. First, the 'industrial web' strategy used precision attacks on key economic targets designed to cripple the German economy and erode the 'social and political cohesion needed for resistance.'¹⁴ Second, a 'Douhet-style' strategy of incendiary bombing on population centres began in earnest from early 1942, which the Americans supplemented with their own precision bombing campaign of industrial targets from 1943¹⁵. These strategies hoped to defeat Germany through air power alone, avoiding a cross-channel invasion if possible. By mid-1944, this approach involved strategic bombing and the threat of a massive ground offensive and invasion from the west and east.¹⁶ In all, Allied bombers attacked 61 major cities and 31 towns, razing 128 square miles, rendering homeless seven and a half million people, killing 305,000 people and wounding 780,000.¹⁷ These attacks, particularly against cities like Hamburg and Dresden 'shocked the entire German people.' But did strategic bombing fulfil its promise?

Pape argues convincingly that the strategy largely failed. He cites the lack of evidence of any political pressure on German leaders. Civil disobedience

13 Buckley, *Air Power*, p. 111.

14 Robert Pape, *Bombing to Win: Air Power and Coercion In War* (New York: Cornell University Press, 1996), p. 258.

15 According to Pape, though the Americans only bombed population centres towards the end of the war (arguably beginning in earnest with Operation *Thunderclap* on 3 Feb 1945), the British had detailed plans from the beginning. Key to this strategy was Bomber Command's assessment that the key to civilian morale was their welfare, which was dependent upon possession of their homes. See Pape, *Bombing to Win*, p. 262.

16 Pape, *Bombing to Win*, p. 267.

17 Pape, *Ibid*, p. 271.

was light, and in some cases, bombing is said to have strengthened political ties as civilians became dependent on Nazi relief organisations.¹⁸ The German state structure was efficient at silencing dissent, and propaganda was used to strengthen nationalistic resolve.¹⁹ Additionally, strategic bombing failed to depress the German economy in any meaningful way, and German war production actually rose until late 1944.²⁰ A large, resource-rich continental power like Germany was simply not vulnerable to economic targeting as long as it was able to extract resources from its territory in Europe. As such there was no 'Achilles heel' with which to deal a knockout blow. Arguably, the decline of the German economy was due to territorial losses, not strategic bombing, as the threat of invasion and a massed ground offensive loomed. In addition, Pape argues that, in 1944, the shift to operational interdiction and tactical air attacks, rather than strategic bombing resulted in large-scale ammunition and petroleum shortages. I agree with his assertion that air planners had fundamentally misplaced confidence in achieving victory through air power at the expense of building ground forces, to the extent that the air war was decisive in Western Europe because it was largely predicated on the success of land armies.²¹

While admittedly restricted in scope, the European theatre is instructive because, of any major industrial war, it was arguably the closest to fulfilling the promises of 'morale bombing' and 'offensive air power' as envisioned by the wide-eyed prophets like Trenchard, Mitchell and Douhet. While the 'Douhet strategy' was implemented successfully, destroying large parts of Germany's major cities by the end of the war, it did little to conclude it quickly nor fulfil any Douhetian prophecies. To be fair to Douhet, his cold, nightmarish vision of the combined use of incendiaries and poison gas were never fully realised in the World War II, although, arguably, technology in the nuclear age has since made it possible for these prophecies to be realised. The Japanese surrender following the bombings of Nagasaki and Hiroshima appear to have validated them, but only when they are taken in isolation, and the several years of bloodshed that preceded it are ignored. The modern

18 Pape, *Ibid*, p. 272.

19 Pape, *Ibid*, p. 272.

20 Levine, *The Strategic Bombing Of Germany*, p. 190.

21 Pape, *Bombing to Win*, p. 311.

nation-state is capable of enduring an extraordinary amount of punishment when interests are sufficiently important; a resistance that conventional munitions and strategic bombing is unlikely to overcome alone.

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AIR POWER IN THE 21ST CENTURY: STRATEGIC ISSUES

LIEUTENANT JOSHUA WOODWARD

Since its inception as a new sphere of warfare in the early stages of the 20th century, air-power theorists have attempted to codify air strategy and outline the importance of prosecuting the enemy by using the third dimension. Thinkers such as Giulio Douhet argued that controlling the air would allow for complete control of the battle space. Strategic bombing offered an opportunity to crush enemy morale and physical structures and thus bring a swift and decisive end to conflicts. Indeed, during the last century, air power has been employed to devastating effect to support a wide range of targeted campaigns and broad-based conflicts. This paper argues that, in the case of the First Gulf War (1990-1991), the overwhelming superiority of US air power demonstrated the importance and significant strategic benefit from controlling the third dimension.¹ Through examination of Douhet's theory on air power by using Warden's 'centric rings' model, the air campaign in the First Gulf War will be analysed and used to prove that the 'promise of air power' has been realised with devastating effect.

During the last century, since the birth of powered flight, what defines air power has motivated considerable discussion. The concept has been framed in simple yet broad terms using highly specialised definitions that pertain exclusively to controlled flight. For this paper, a definition articulated by two Royal Air Force officers will be used; that is, air power derives from 'the ability to project military force by or from a platform in the third dimension above the surface of the earth' (Mason, 1992). Although a controversial figure in the study of air-power theory, Giulio Douhet's works must be analysed to understand the foundation of this field of study. First published in 1921, Douhet's text, *The Command of the Air*, outlined his theory on air power, which, importantly, formed the basis of initial forays into the third dimension

1 In this context, the 'third dimension' refers to any space above the surface of the earth.

by the United States. In short, Douhet's theory revolves around the use of sustained aerial bombardment, on a grand scale, to target enemy centres of population and industrial facilities in an effort to bring about a total collapse of the enemies systems (Buckley, 1998) This approach would thereby allow ground forces to move around the battle space largely unimpeded.

The second, linked theme to his theory covers the psychological aspects of air warfare. His theory states that the aim of air power should be to make life 'intolerable' for the enemy, because a sustained air campaign would have a greater impact on the morale of combatants and the populace than the physical destruction itself (Haslam, 2012). Elements of Douhet's theory were, at the time and could still, arguably be considered extreme measures in warfare. Of note was his advocacy first, to use poison gas and second, to target civilians. It must be acknowledged, however, that his theory was born of the immediate post-World War I period and was based on a desire to rapidly conclude any future conflict. Despite f some controversial elements, other parts of the theory can still be analysed and compared against modern air campaigns for relevance and validation.

As mentioned before, Douhet's theories helped to influence thinking in the USA about how the third dimension should best be used in war. Arguably, his theories had the greatest influence on US strategic thought vice and other State (Faber, 1997). Indeed, the much lauded officer and so called 'father of the U.S. Air Force', Billy Mitchell, met with Douhet in Paris in the mid-1920s. From this meeting, excerpts from *The Command of the Air* were written into the earliest US air-power doctrine and focused on strategic bombing (Wildenberg, 2014). Despite Douhet's connection with US air power, some scholars point out that his contribution to developing theory was small, with his impact on crystallising strategic bombing in particular being 'peripheral' (Buckley, 1998). He is criticised specifically for overestimating the psychological effect of bombing and for his optimistic figures on the destructive effect of air-dropped munitions (Corum, 1997).

While a thorough analysis of Douhet's theories and their validity are beyond the scope of this essay, it is broadly clear that *The Command of the Air* underlay what was conceived initially about the nature of air power. Certainly, his view, that is, that large-scale bombing campaigns, controlling the air, and targeting essential military and civilian structures would decisively shift the balance of power during conflict, has proven to be true

on various occasions. Notable is the experience of the United States Air Force (USAF) during the First Gulf War and its application of concentrated and technologically superior air-power assets. Indeed, this conflict demonstrated the devastating impact that air power can have on an enemy force and the manner in which it can be used to quickly and decisively end a conflict.

The primary component of the US campaign in Iraq in 1990, code-named *Instant Thunder*, motivated the initial actions of the war. *Instant Thunder* sought to quickly and decisively gain control of the air, destroy or render inoperable Iraqi air force assets, and eliminate major surface-to-air threats (Cody, 1996). This first push was intended not only to ensure that the ground environment was prepared for an invasion force but also to signal to the Iraqi people that, because Saddam Hussain's regime was weak, they could face unrelenting air attack (Pape, 1996). Here, elements of Douhet's theory become evident: first is the strategic importance of controlling the battle space; and second is a psychological message being sent to the populace. Indeed, within just six days, 84 targets were struck. *Instant Thunder*, as a modern model for applying air power, saw a vast array of electronic warfare, strike and air-to-air combat aircraft penetrate Iraqi airspace, this rendering Saddam's air force unusable and retaining what remained of his ground forces in situ (Pape, 1996).

Although it would be erroneous to suggest that Douhet's theories on air power exclusively informed third-dimension planning considerations during the lead up to the Gulf War, it is clear that elements of his theory were seen in the campaign. Further validating the theory that the promise of air power, as a game changer in modern warfare, has been achieved can be accomplished through understanding Warden's Five Rings. This model of strategic attack focuses on the requirement to target five enemy centres of gravity to secure victory.² In the case of *Instant Thunder*, this strategy was used, with reference to the first ring, in an effort isolate Saddam from his military leadership and command and control structures and vice-versa. Air power was then used to attack the processes of Iraqi combat capability, that is, aircraft, radar facilities and ground-based weapons systems (Warden, 2011). In the third ring, key infrastructure such as oil refineries, bridges and railroads were targeted and

2 From the centre, Warden details each centre of gravity; these being: Leaders, Processes, Infrastructure, People and Fielded Forces (Jackson, 2000).

destroyed prior to the invasion force moving into the country (Pape, 1996). Further, on the fourth ring, focus was given to the Iraqi people in an effort to highlight the weakness of Saddam's regime and demonstrate the potential terror associated with protracted aerial bombardment. Finally, regarding the fifth ring of the model, air power allows fielded forces to be isolated and destroyed, both by air and by the advancing ground forces. Ultimately, this model clearly outlines how air power is powerful when it is employed in a targeted and well-planned manner. This case study further clarifies that the promise of air power, as a strategic action, has been realised in modern warfare.

In conclusion, air-power theory and strategy has undergone multiple changes and interactions in an effort to prosecute an enemy force in the third dimension. Air-power theorists such as Giulio Douhet argue that control of the air would allow for complete control of the battle space. At the same time, aerial bombardment was intended to destroy both physical structures and the morale of enemy forces and populations. In this paper, it has been argued that, in the case of the First Gulf War, the overwhelming superiority of US air power demonstrated the importance and significant strategic benefit associated with air power. Douhet's early theories on air power were examined and compared with practical iterations seen during the Gulf War. Further, Warden's Five Rings were used to break down the air war and examine how sustained and targeted destruction of an enemy system can result in decisive victory. Indeed, it is clear that, in this example, the strategic use of the third dimension has proven that the 'promise of air power' has been realised with devastating effect.

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