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**TOO MUCH ART AND TOO LITTLE SCIENCE:
THE LEGACY OF THE COMBINED BOMBER
OFFENSIVE OF THE SECOND WORLD WAR**

By

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About the Author

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INTRODUCTION

In the span of one lifetime, the polemicist rhetoric of air power appeared validated by the atomic bombing of Japan. It could be argued the aerial fleet had been reduced to one aeroplane and one bomb and the passionate debate about air power had reached its zenith. Since its introduction in the First World War there has never been the same extent of strategic debate about the principles, effectiveness and uses of land or sea power as there has about air power.¹

During the twentieth century, developments in total war, strategic bombing, nuclear weapons, limited war, and revolutionary people's war have forced policy makers to adapt existing frameworks when employing force.² The marriage of the art and science of war to form the military element of national power has developed these frameworks. An essential feature of the military element of national power is air power, and, as noted by Eliot Cohen, it has grown to assume a prominence to become an unusually seductive form of military strength complete with its own 'mystique'.³

The 1991 Gulf War (Gulf War) demonstrated United States (US) possession of a military capability that was a successful synergy of post-Vietnam developments of their armed forces. Key amongst the successes of the Gulf War was air power. Its advocates argued that the revolution in military affairs (RMA), as evidenced by the fusion of air power and technology, gave the US a leading military edge over conventional opponents. More importantly, 'surgical strike' was seen to have valuable political leverage when applied across the spectrum of conflict. Air strikes and threats of air strikes have become a common feature of international relations in the post-Cold War world. They have featured prominently since the Gulf War to their recent employment as a stand-alone element of armed force in the recent Balkans crisis during Operation *Allied Force*.

This paper will discuss the legacy of air power from the Second World War and its influence, if any, on air power today. In so doing, it will discuss the development of the art⁴ and science,⁵ of air power. The theme of this paper is not on the technical

¹ Armitage, M.J., and Mason, R.A., *Air Power in the Nuclear Age, 1945-84*, Macmillan, London, 1985, pp vii - 2.

² Metz, S., and Kievit, J., *The Revolution in Military Affairs and Conflict Short of War*, Part VI, 25 July 1994, p 2.

³ Cohen, E., 'The Mystique of US Air Power', in *Foreign Affairs*, Vol. 73, No. 1, 1994, p 109.

⁴ There are various definitions of the art of war. Clausewitz defines the art of war as 'the art of using the given means in combat', in Howard, M., and Paret, P., (eds), *On War*, Carl Von Clausewitz, Princeton University Press, Princeton New Jersey, 1984, p 127. The Australian Army views it as, 'the skilful employment of military forces to attain strategic goals through the design, organisation, sequencing, sustainment and direction of campaigns and major operations' in *Land Warfare 1: The Fundamentals of Land Warfare*, Department of Defence, Army, 1997, p 1/5. I believe the best explanation is, 'The conduct of war is ultimately an art, an activity of the human will. The art of war requires the intuitive ability to grasp the essence of a unique battlefield situation, the creative ability to devise a practical solution, and the strength of purpose to execute the act', in *FMFM 1 - Warfighting*, US Marine Corps, 1989, pp 14-15.

⁵ *FMFM 1 - Warfighting*, pp 14-15. The science of war includes those activities directly subject to the laws of physics, chemistry, and like disciplines; for example, the application of fires, the effects of weapons, and the rates and methods of movement and resupply. The science of war stops short of the need for military judgement, the impact of moral forces, the influence of chance, and other similar factors.

aspects of air power, but rather what it represents to government and the military as an essential part of the military element of national power. The US will be used as a case study from the end of the Second World War to NATO's 1999 Operation *Allied Force* in the Balkans.

FROM THE BOMBER OFFENSIVE TO THE BALKANS

An early example of the changing balance between the art and science of air power (which continues to exist to this day) was demonstrated during the Second World War. Technical development at the time did not move as quickly as doctrine and the gap between theory and practice had taken a long time to close.⁶ For example unescorted bombers did not always 'get through'. The gap between art and science was closed when developments to the P-51 Mustang changed the course of the air war in the Allies' favour. As stated by Alan Stephens 'technical innovation "rescue [d] the theorists"'.⁷ The theme of the changing balance of art and science of air power has been demonstrated to this day through Korea, Vietnam, the Gulf War, and via post-Cold War conflicts.

The culmination of the Second World War with the detonation of two atomic bombs over Japan was cited by air power advocates as vindicating Douhet. The bombs 'seemed to mark a culmination of the pervasive impact of air power during the War'.⁸ Air power also opened the nuclear age with an intensity of focus that surpassed even Douhet's passionate vision of the potential of air bombardment. Despite the diverse nature of the Anglo-American experience of war in the air, air power advocates interpreted the partnership of nuclear weapons and strategic bombers as the source of Allied victory and the promise of a new age of warfare. Advocates like de Seversky prophesied that US air power, in the form of a fleet of strategic bombers, would save the world from the threat of monolithic communism. However, strategic thought behind air power was forced to move away from insistence on the primacy of preemptive strikes to defeat an enemy by overwhelming air attacks on the homeland before the army and navy could mobilise. Within a very short time following the Second World War, new factors began to blur the strategic bombardment focus, and as argued by Armitage and Mason, the history of air power became essentially a history of diffusion where changing political circumstances forced corresponding changes to air power as an element of pursuing political means.⁹

In the post-Second World War era, the armed forces of the Western World were confronted by a new style of warfare that challenged the doctrinal dominance of the strategic bomber. Air power was predicated on the potency of the atomic weapon and the apparent readiness of the US to use it. This represented an effective deterrent to

⁶ Armitage and Mason, *Air Power in the Nuclear Age*, pp vii, 2.

⁷ Frankland, Nobel, *The Bombing Offensive Against Germany*, Faber and Faber, London, 1965, pp 78-83, as quoted in Stephens, A., *In Search of the Knock-Out Blow: The Development of Air Power Doctrine 1911-1945*, Air Power Studies Centre, Paper Number 61, February 1998, p 39. Stephens notes that the P-51 Mustang was able to establish *local* air superiority *around* bomber formations. This placed German fighters automatically on the defensive thus diverting fighters away from the mission-essential bombers thus greatly reducing their losses.

⁸ Armitage and Mason, *Air Power in the Nuclear Age*, p 1.

⁹ *ibid.*, p 244.

direct confrontation between the US and its communist competitors. The art and science of air power was balanced and prepared to counter any aggression. However, while NATO and the Warsaw Pact faced each other menacingly in Europe, the Cold War was prosecuted through proxy states in the third world using conventional weapons.¹⁰ This was the era of 'limited war' consisting of constraint either geographically, via the amount of resources committed, weapons employed, or political objectives of the belligerents.¹¹

Armitage and Mason argue that the post-Second World War environment of the Cold War introduced a pragmatic and piecemeal process during which different categories of war and warlike confrontation emerged, such as guerilla warfare experienced by the Malay Emergency and Vietnam; and local conventional wars such as in Korea, the Middle East (Arab-Israeli Wars), and the Falklands.¹² The Korean War, just five years after the end of the Second World War, proved that the strategy of US strategic bombing and accompanying resources were inappropriate for that type of peripheral conflict. The art and science of air power strategy, apparently vindicated with the end of the Second World War, was thus undermined and unbalanced.

As the paradigm of warfare changed, it raised a number of significant questions about the future of air power. Air power theory did not provide the key to expected victories in Korea and Vietnam. How was air power to be effectively employed in these non-traditional missions? Did the strategic bomber have a role in this style of conflict or were other forms of air power more appropriate?

For the US and air power advocates, the Gulf War represented a watershed in military history. As the first unambiguous post-Second World War triumph of American military strength, it was argued that it banished the 'ghosts of Vietnam' which plagued the US armed forces for more than two decades. It has also been interpreted as the first war in President George Bush's 'New World Order' and therefore linked with the end of the Cold War and the rise of US hegemony.¹³

Alvin and Heidi Toffler have depicted the Gulf War as the first war in the third age of mankind – the 'Information Age'.¹⁴ They argue that US technological superiority over a large Iraqi army based on the old 'Industrial Age' paradigm of mass, is evidence that knowledge has now become mightier than the sword. The Gulf War, in particular Operation *Desert Storm*, was seen as a trial run that hinted tantalisingly at what was still to come within the realm of what was an RMA, and a 'precursor-war', an indication of the revolutionary potential of emerging technologies and new military

¹⁰ *ibid.*, p ix.

¹¹ Stephens, A., 'The Transformation of 'Low Intensity' Conflict', in *Small Wars and Insurgencies*, Vol. 5, No. 2, Spring, 1994, p 144. Korea is a very good example where conflict was contained below the Chinese Manchuria border and kept conventional for fear of escalation into nuclear confrontation. Minimal resources were transferred from the European theatre due to NATO commitments.

¹² Armitage and Mason, *Air Power in the Nuclear Age*, pp 244-248.

¹³ 'We will prevail, Bush tells nation', in *The Australian*, 31 January 1991, p 6. President Bush argued: 'What is at stake here is more than one small country; it is a bid idea; a new world order – where diverse nations are drawn together in common cause, to achieve the universal aspirations of mankind: peace and security, freedom, and the rule of law'.

¹⁴ Toffler, A. and Toffler, H., *War and Anti-War: Survival at the Dawn of the 21st Century*, Little Brown, Boston, 1993, pp 33-85.

systems particular to air power.¹⁵ *Desert Storm* was seen as the result of years of accumulated improvement in war technology and was heralded as a new beginning to fundamentally transforming the nature of warfare.¹⁶ More importantly, the science of war had caught up with the art of war: technology finally caught up with doctrine.¹⁷

Advocates of air power point to the Gulf War as evidence that technology, doctrine and training have finally delivered Douhet's promise of air power as the decisive weapon on the battlefield.¹⁸ Post-mortems of the Gulf War are littered with Douhetist conclusions. For example General Mc Peak, the USAF Chief of Staff claimed that, 'This is the first time in history that a field army has been defeated by air power'.¹⁹ General Charles Horner, the USAF Commander of all coalition aircraft in the Gulf War described the war as '... new era warfare'.²⁰ While it was promoted as new and innovative, the air campaign reflected a clear lineage from the precision bombing theories of the 1930s and the principles espoused by Douhet.²¹

Air power used during the Gulf attracted its supporters and detractors alike. Supporters point to the universality of the 'lessons learned' while detractors point to the unique geographical circumstances which showed air power to great advantage, for example the flat featureless terrain with a lack of concealment and cover was ideal targeting geography for air operations.²² Whatever the respective merits of argument and counter argument, it is clear that air power 'played a significant positive role in removing Iraqi forces from Kuwait'.²³

Since the end of the Gulf War, air strike and the threat of air strike, as a negotiation technique, have become common features of international relations. Air strike or the threat of air strike have been used in 1994 with the Bosnian Serb attack around Gorazde, NATO's bombing of Bosnian Serb forces in 1995, against Iraq from 1991 to 1999, and recently in Kosovo with Operation *Allied Force*.²⁴ The use of air power in

¹⁵ Bacevich, J., 'Morality and High Technology', in *The National Interest*, Number 45, Fall 1996, p 37, and A.F. Krepinevich, 'Cavalry to Computer: The Pattern of Military Revolution,' in *The National Interest*, Number 37, Fall 1994, p 40.

¹⁶ Metz, S., 'A Wake for Clausewitz: Toward a Philosophy of 21st-Century Warfare', in *Parameters*, Winter 1995-96, Volume XXIV, Number 4, p 184; and, E. Cohen, 'A Revolution in Warfare', in *Foreign Affairs*, Volume 75, Number 2, March-April 1996, p 37.

¹⁷ Dugan, M.J., 'Catching Up With Doctrine' in *Jane's Defence Weekly*, 29 June 1991, p 74; and Waters, G., *The Strategic Air Lessons of the Gulf War*, Australian Defence Studies Centre, UNSW, ADFA, Working Paper Number 6, 1992, p 14. Waters notes that Allied forces were able to conduct operations totally in accordance with that doctrine.

¹⁸ Jones Jr., J., 'Giulio Douhet Vindicated: Desert Storm 1991', in *Naval War College Review*, Volume XLV, Number 4, Sequence 340, Autumn 1992, pp 97-101.

¹⁹ *The Washington Post*, Sunday, 16 March 1991, as quoted in R. Sibbald, 'The Air War', in J. Pimlott and S. Badsey (eds.), *The Gulf War Assessed*, Arms and Armour, London, 1992, p 123.

²⁰ Horner, C., 'New Era Warfare', in Stephens, A. (ed.), *The War in the Air 1914-1994*, Air Power Studies Centre, Fairbairn, 1994, p 321.

²¹ Hallion, R., *Storm Over Iraq: Air Power and the Gulf War*, Smithsonian Institution Press, Washington DC, 1992, p 266. It can be argued that there is a link between the Air Corps Tactical School 'industrial web' or 'node' theory and that of John Warden and his 'five ring' model of air warfare.

²² Waters, G., 'The Persian Gulf Conflict: Implications for RAAF Air Power Doctrine', in *Australian Defence Force Journal*, Number 99, March/April, 1993, p 49.

²³ Quiggin, T., 'Do Airstrikes Amount to an Effective Policy?' in *Royal United Services Institute for Defence Studies Journal*, Volume 144, Number 2, April/May 1999, p 17.

²⁴ *ibid.*, pp 15-16.

these conflicts reflects the changing definition of security in the post-Cold War world. The art and science of air power developed from the legacy of the combined bomber offensive of the Second World War through the Cold War to its impressive maturation in the Gulf War. They have been challenged further by the changing security of the post-Cold War world.

Warfare will remain a lethal confrontation fought potentially across a broad spectrum of conflict from 'global nuclear war' to 'limited war'.²⁵ The end of the Cold War saw a further reassessment of the utility of military force. Scilla Elworthy argues that contemporary military thinking, still structured by the Cold War and based on the traditional role of the nation state, is quite unable to cope with the global security problems that have emerged from under the blanket of the Cold War.²⁶ With the collapse of the Soviet Union and the end of the Cold War the prospect of global nuclear war seems unlikely and this prompted a reassessment of US strategy to reflect post-Cold War security.²⁷ US capability and planning teams worked with two critical assumptions: firstly, US forces would continue to defend American territory, lives, and property; and secondly – which affects air power - the US would continue to exercise a leadership role in the world. From these assumptions they identified three major changes in the world environment: the collapse of the Soviet Union and the Cold War national security order; rise of global economic interdependence; and an accelerating pace of technological change.²⁸ These issues, in relation to the causes of future conflict, move security away from the historical paradigm of military capability. Further among these issues are: gross inequitable distribution of world income; a range of core environmental problems; and side effects of military technical acquisition by states and sub-states. In further expanding these three points, Elworthy also notes eight important issues: the environment as a security issue; income disparity and economic polarisation; energy and natural resources as security issues; early warning of conflict; conflict prevention; risk of nuclear accident or terrorism; global communications; and development of a global security structure.²⁹ Elements of these issues are reflected in the use of air power from the Gulf War to Operation *Allied Force* in 1999.

Clausewitz has stated:

... war is not merely an act of policy, but a true political instrument, a continuation of political intercourse, carried on with other means. ... War in general, and the commander in any specific circumstance, is entitled to require that the trend and designs of policy shall not be inconsistent with these means ... The political object is the goal, war is the means of reaching it, and means can never be considered in isolation from their purpose.³⁰

²⁵ Stephens, A., 'The Transformation of 'Low Intensity' Conflict', p 143; *Land Warfare 1: The Fundamentals of Land Warfare*, p 2/9 notes that the consequences for national security and survival are normally more severe as the spectrum approaches total war.

²⁶ Elworthy, S., 'Security Threats - Is There a Need for a Further Review?' in *Royal United Services Institute for Defence Studies Journal*, Volume 144, Number 2, April/May 1999, p 19.

²⁷ ... *From the Sea*, 'Introduction'. (Note this white paper does not have numbered pages).

²⁸ Smith, Edward A., 'What '... From the Sea' Didn't Say', *Naval War College Review*, Volume XLVIII, Number 1, Winter 1995, p 11.

²⁹ Elworthy, 'Security Threats', pp 19-22.

³⁰ Howard and Paret (eds), *On War*, p 87.

When considering this extract in a contemporary sense, it can be argued that diplomacy and war are related but dissimilar. Diplomatic objectives, by design, are ambiguous thus leaving room for negotiation and varying interpretations, which is often beneficial for political purposes. Diplomacy has been termed as ‘the art of compromise, with the intention of creating a ‘win-win’ situation that each side can sell to their populations as a success’.³¹ Military objectives are, and should be, as unambiguous as possible as they are about employing lethal force across all mediums.³²

The issue of ways and means of military capability to achieve the political ends differed in the conduct of the Gulf War and Operation *Allied Force*. The US utilised the Weinberger Doctrine to articulate clearly its political objectives for the Gulf War.³³ The Coalition forces developed their military objectives, supported by UN resolutions, from the strategic imperatives of the Weinberger Doctrine and through US political objectives. The Gulf War was not won by technology alone; political will, the use of force sanctioned by the UN, and international support were fundamental to its success.³⁴

On the other hand, the recent conflict in Kosovo and NATO’s Operation *Allied Force* demonstrate a lineage from the Gulf War and the successful 11 days of air strikes against Bosnian Serb forces in the autumn of 1995 which saw Serbian President Slobodan Milosevich withdraw his forces from Gorazde’s 20 kilometre perimeter.³⁵ Operation *Allied Force* commenced on 24 March 1999 with cruise missile strikes against selected targets in Yugoslavia. The three aims of the Clinton administration for the operation were to: ‘coerce the Milosevich government into desired behavior, to deter further repression of Kosovars and, if all else failed, to diminish the Serb military’s ability to conduct that repression’.³⁶ The campaign concluded 78 days later on 9 June 1999.³⁷

John Correll believes that Operation *Allied Force* will be studied in the world’s war colleges for years to come because the operation, as aptly described by John Keegan, ‘marked a real turning point in history when the capitulation of President Milosevich proved that a war can be won by airpower alone’.³⁸ While the ‘jury is still out’ on the assessments of Operation *Allied Force*, it is indeed a landmark campaign that demonstrates the use of armed force in international negotiations in the post-Cold War

³¹ Hayward, J., ‘NATO’s War in the Balkans: A Preliminary Analysis’, in *New Zealand Army Journal*, Number 21, July 1999, p 4.

³² Correll, J.T., ‘Editorial: Assumptions Fall in Kosovo’, in *Air Force*, Vol. 82, Number 6, June 1999, p 4.

³³ Note that some authors also refer to the ‘Powell Doctrine’ which is a similar doctrine developed by General Colin Powell, Chairman of the US Joint Chiefs of Staff from 1989 to 1993.

³⁴ Sabrosky, A.N., and Stone, R.L., *The Recourse to War: An Appraisal of the Weinberger Doctrine*, US Army War College, 1993, p 11.

³⁵ Quiggin, ‘Do Airstrikes Amount to an Effective Policy?’, p 17. These air strikes also threatened seriously his major strongholds in Prijedor and Banja Luka.

³⁶ Hayward, ‘NATO’s War in the Balkans’, p 5.

³⁷ Tirpak, J.A., ‘Washington Watch: Victory in Kosovo’ in *Air Force*, Volume 82, Number 7, July 1999, p 24.

³⁸ Keegan, John article in the London *Daily Telegraph* quoted in Correll, J.T., ‘Editorial: Airpower and its Critics’, in *Air Force*, Volume 82, Number 7, July 1999, p 3. Whilst these claims have been made in reference to the Gulf War, the key issue with *Allied Force* is that no ground troops were involved.

world. Like the Gulf War, it too has supporters and detractors.³⁹ Supporters laud the use of air power to terminate a humanitarian crisis. Detractors ask whether NATO had the right to use armed force against a sovereign nation?⁴⁰ Whether air strikes alone can change the behavior of a targeted state, and note the air war itself was the unintended consequence of a gross error in political judgment where Kosovars emerged considerably worse off than they had been before.⁴¹ Once again the art and science of air power has had to adapt to new challenges posed by contemporary security.

The conduct of Operation *Allied Force* reflects (through NATO) the US administration's policy on the use of armed force. Similar to what President Bush called the new world order, Michael Mandelbaum refers to the 'Clinton Doctrine' of humanitarian intervention.⁴² In exercising this doctrine, John Gentry notes the US has developed some of the most effective weapons in the world, and for years has displayed an aversion to using them if casualties would be sustained, or success would not be prompt and near painless. He further notes that President Clinton's only use of significant military force has been in the form of air and missile strikes or what he calls 'petulant high-tech pinpricks'.⁴³

It has been argued that Operation *Allied Force* went against the Clausewitzian maxim of war and politics where political rhetoric aimed against the Milosevich regime was 'difficult to translate into missions that could be achieved by military means'.⁴⁴ Hayward argues that the three primary goals of the Clinton administration 'did not form a clear and internally consistent objective for military action'.⁴⁵ Here he draws a distinction between the Bush and Clinton administrations in their use of military force. The Bush administration committed US forces to combat in the Gulf War in accordance with their political framework of the Weinberger Doctrine. Once committed, overwhelming force was applied successfully and decisively. The opening stages of Operation *Allied Force* have been described as tentative, with limited air attacks, vague objectives, and unimpressive results as Kosovars were subjected continuously to Serb brutality. Phase two operations however obtained improved results. The key here was a new targeting strategy described by Hayward as '*à la*

³⁹ Tirpak, J.A., 'Washington Watch: Lessons Learned and Re-Learned', (this article is based on USAF Chief of Staff reflections on Operation *Allied Force*) in *Air Force*, Volume 82, Number 8, August 1999, p 23. According to this article it is expected to take as much as a year to digest what happened and translate it into applicable policy, strategy, and budgetary action.

⁴⁰ A key issue is that the United Nations Security Council did not authorise the use of force. This then makes NATO's action a contravention of the UN Charter. As noted by M. Mandelbaum, 'A Perfect Failure', in *Foreign Affairs*, Volume 78, Number 5, September/October 1999, p 6, this issue meant also that NATO did not justify fully the requirements of 'Just War' theory.

⁴¹ Orend, B., 'Crisis in Kosovo: A Just Use of Force?' in *Politics*, Volume 19, Number 3, September 1999, p 125; Quiggin, 'Do Airstrikes Amount to Effective Policy?', pp 15-17, Mandelbaum, M., 'A Perfect Failure', p 2.

⁴² Mandelbaum, 'A Perfect Failure', p 5. This doctrine consists of two parts: the use of force on behalf of universal values instead of the narrower national interests for which sovereign states have traditionally fought; and, in defense of these values, military intervention in the internal affairs of sovereign states rather than mere opposition to cross-border aggression, as in the Gulf War. See also Hayward, 'NATO's War in the Balkans', pp 1-2.

⁴³ Gentry, John A., 'Military Force in an Age of National Cowardice', in *The Washington Quarterly*, Volume 21, Number 4, Autumn 1998, pp 179-185.

⁴⁴ Correll, J.T., 'Editorial: Airpower and its Critics', p 3.

⁴⁵ Hayward, 'NATO's War in the Balkans', pp 4-5.

Warden's five rings' where Serbia's centre of gravity was targeted. This forced a compromise out of the Milosevich regime as it effectively paralysed the nation and exacerbated Milosevich's political isolation.⁴⁶

NATO doctrine is primarily based on US warfighting doctrine which has been fine-tuned by experience in conflict over the centuries. NATO's military organisation was designed to fight high-intensity combat operations up to and including nuclear war. Its only enemy for more than 40 years had been the Soviet Union and Warsaw Pact forces involving large-scale employment of heavy mobile forces. NATO's intelligence and air power capabilities were designed to operate over the European plains. When applied to limited war they are now forced to look for small numbers of forces spread out on terrain that limits the effectiveness of most means of detection.⁴⁷ Thomas Quiggin notes an oft used Western intelligence line of 'We do deserts, we do not do mountains'.⁴⁸ Many analysts and authors argue, that this capability which was designed to use force overwhelmingly and decisively, 'initiated an air campaign that involved *limited* and *gradual* application of force and also violated to various degrees most of the nine basic principles of war that the American military hold sacred'.⁴⁹

One of the reasons for the focus on air power and the gradual application of force is the avoidance of casualties which may bring domestic dissatisfaction leading to political fallout. Hayward argues that the Clinton administration views air power as the best means of using coercion - the threat or use of military force to modify the behavior of misbehaving nations - to achieve political aims while avoiding casualties and collateral damage.⁵⁰ The experience of Somalia in 1993, with 18 dead US servicemen was still fresh, so high returns and low costs were the aims, especially when US national interests are not at stake. However, one element of coercion ruled out by the Clinton administration was the use, or more importantly the threatened use, of ground forces. Once again the 'body bag' and 'CNN factor' came into play. This placed more emphasis on the utility of air power well outside the experiences of the Gulf War where ground forces could exploit the opportunities created by air power which shaped the battlefield in favour of Coalition forces. The Clinton administration, possibly using their success from autumn 1995 as a precedent, believed it would be a quick campaign. US Secretary of State Madeleine Albright said 'I don't see this as a

⁴⁶ Tirpak, J.A., 'Washington Watch: Victory in Kosovo', p 24. Hayward, 'NATO's War in the Balkans',

pp 8-13, notes up until early May the operation remained marred by a mismanaged economy of force. This prompted John Warden, principal architect of the *Desert Storm* air offensive, to complain 'the way the air war has been designed suggests it was a very bureaucratized, compartmentalised, and not very competent approach. The target list has clearly not been designed to have a systematic impact on Serb forces. This is very unprofessional on the part of the various political authorities.' Phase Two operations saw a more positive response from John Warden.

⁴⁷ Quiggin, 'Do Airstrikes Amount to Effective Policy?', p 16.

⁴⁸ *ibid.*, p 16.

⁴⁹ Hayward, 'NATO's War in the Balkans', p 4. Hayward quotes the *Air Force Basic Doctrine Document 1* (1997), pp 11-21, and details that these principles of war are: objective, offensive, mass, economy of force, manoeuvre, unity of command, security, surprise, and simplicity. See also Quiggin, 'NATO's War in the Balkans'; and Mandelbaum, 'A Perfect Failure'.

⁵⁰ Hayward, 'NATO's War in the Balkans', pp 1-2. For a good study of this modern political phenomena see Pape, R., *Bombing to Win: Air Power and Coercion in War*, Cornell University Press, 1996.

long-term operation. I think it is achievable within a relatively short period of time'.⁵¹ Operation *Allied Force* proved successful with no loss of allied life in combat, however, despite a legacy from the Gulf War of precision strike, unintended loss of civilian life and collateral damage still plagued the US administration.

A key issue of conflict in the latter half of the twentieth century is casualties of any kind: friendly, enemy, civilian, and infrastructure. Alan Stephens notes that in contemporary conflict, 'casualties are the new centre of gravity'.⁵² A.J. Bacevich notes that the hubris of precision strike is producing a zero-defect culture in the conduct of war. He states, 'The expectation that *Desert Storm* has endowed the United States with the capacity to dominate world events without soiling itself in the process only sets Americans up for bewildering and painful disappointments... As precision increases, so do expectations, constantly 'raising the bar' of acceptable performance'.⁵³ This is definitely not a legacy of the Second World War where that generation stoically endured, as the norm, casualties caused by carpet-bombing, including aircrew losses, civilian casualties and collateral damage. This now appears (rightly so) unacceptable to the current generation.

An important issue of the RMA as it relates to air power, in particular for liberal western democratic societies, is the ethical application of lethal precision-strike weapon platforms. In a strong article on military ethics Ralph Peters states that, 'We live in a stage of Western Civilisation in which nameless casualties inflicted by bombing campaigns are acceptable ... the greatest cause of perversion in the 'logic' of military ethics has been the rise of technologies that distance the killer from the killed'.⁵⁴ He goes on further to discuss the fact that wars of technologically advanced western powers are, or attempt to be, wars of alienation, concluding that modern man has dehumanised warfare.⁵⁵ He notes that what is unacceptable from the human is acceptable from the machine, giving the example that, if a soldier shoots a family, the soldier is a war criminal, whereas if a pilot misses the target and instead kills a family, it is simply an unsuccessful mission. Soldiers enter towns, but aircraft, not pilots, fly above it.⁵⁶ Operation *Allied Force* was hailed as the most precise application of air power in history. However as noted by Hayward, a series of dreadful accidents occurred, such as: destruction of civilian refugee convoys and passenger trains, scattering of cluster bombs in a busy market place, and the bombing of the Chinese Embassy in Belgrade.⁵⁷ In most cases the weapons hit their designated target and the blame has been placed on faulty intelligence and an initial reluctance to fly below

⁵¹ Quoted in Correll, 'Editorial: Assumptions Fall in Kosovo', p 4; Hayward, 'NATO's War in the Balkans', p 2.

⁵² Stephens, Alan, 'The Transformation of 'Low Intensity' Conflict,' p 159.

⁵³ Bacevich, 'Morality and High Technology', pp 39-44, and Hayward, 'NATO's War in the Balkans', p 14.

⁵⁴ Peters, Ralph, 'A Revolution in Military Ethics', in *Parameters*, Summer 1996, Volume XXVI, Number 2, pp 102-103; Overy, R., *Why the Allies Won*, Jonathan Cape, London, 1995, p 296, discusses a similar issue where the use of technology in the Second World War produced a distance between those who planned and executed attacks and the victims themselves. For example a Western ground army would never have run amok in Hamburg, murdering 40,000 people. Bombing permitted a kind of moral detachment, evident in the language surrounding it. The attack on city suburbs was called 'de-housing', as if the buildings could in some way be separated from the families inside.

⁵⁵ Peters, 'A Revolution in Military Ethics', p 4.

⁵⁶ *ibid.*, p 4.

⁵⁷ Hayward, 'NATO's War in the Balkans', p 14.

15,000 feet to avoid shoulder-fired air defence missiles which made confirmation of targeting difficult.

The reason for incidents such as these are summarised by Eliot Cohen and Michael Howard where they note that the lethality of direct combat and its physical and intellectual demands have grown and availability of advanced technology does not automatically sharpen the judgement of military leaders.⁵⁸ Technological advances produce more lethal and faster weapons platforms, and a fluid, fast-paced battlefield requiring intensive human decision making, influence, analysis and leadership to reap their potential benefits.⁵⁹ Regardless of technology's advancement rate, humans will continue to evolve at nature's rate, and no technology can make up for basic errors in making or implementing strategy.⁶⁰ Michael Howard and John Guilmartin state, 'While technologically sophisticated weapons can help secure victory, technology in and of itself cannot win wars. Ultimately, wars are won or lost in the minds of soldiers and their leaders.'⁶¹ Supporting the difficulties in maintaining the airman's maxim of 'air power is targeting and targeting is intelligence', we can refer to Clausewitz who recognised that the art of war and human participation in war would forever make it an unpredictable, sometimes illogical and an imperfect endeavour.⁶²

CONCLUSION

The end of the Second World War saw the combined bomber offensive culminate with the atomic bombing of Japan. By this stage technology had matched the theory of air power. The major powers of the world entered the Cold War era with air power balanced between art and science predicated on a nuclear threat. However, conflict during the Cold War world proved to be conventional and within parts of the spectrum of conflict which large-scale forces prepared for nuclear confrontation proved unsuitable. The Gulf War saw the US regain a mastery in combined arms operations not experienced since the end of the Second World War. Air power featured prominently with its effective synergy of the characteristics of air warfare and technology in weapons and platforms. Precision strike, casualty and collateral minimisation, and the effective use of sanctioned military force demonstrated a new political leverage in the conduct of international relations.

Operation *Allied Force* is an example of how the capabilities of air power have become an integral element of international policy. However, it did not achieve its humanitarian objective of preventing President Milosevich from conducting his campaign of ethnic cleansing within Kosovo. There is no doubt that the science of the available air power was as capable and potent as any fielded, however the art, the application of that air power, is where the detailed post-activity reports will concentrate. There are ongoing technical issues experienced during the Gulf War, such as targeting and intelligence all-weather capability for example, however the

⁵⁸ Cohen, E., 'A Revolution in Warfare', p 37.

⁵⁹ Reinwald, B.R., 'Retaining the Moral Element of War', in *Military Review*, Volume LXXXVIII, Number 1, January-February 1998, p 74.

⁶⁰ *ibid.*, p 75.

⁶¹ Howard and Guilmartin, Jr., *Two Historians in Technology and War*, US Army War College, Carlisle, 1994, p iii.

⁶² Howard and Paret (eds), *On War*, pp 75, 87.

correct employment of the ways and means air power capabilities to achieve political ends within political restraints will prove most instructive.

Clausewitz gave the world his famous maxim in 1832 and as evidenced by Operation *Allied Force* it is still relevant today: 'The political object is the goal, war is the means of reaching it, and means can never be considered in isolation from their purpose'.⁶³

⁶³ *ibid.*, pp 75, 87.