

THE ROYAL AIR FORCE

# AIR POWER Review

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# Royal Air Force AIR POWER Review

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# FOREWORD

An overview of the first three volumes of the Air Power Review shows a consistent blend of air power history, operational practice, doctrine and conceptual thinking. At first sight, this should not be in the least surprising as the lessons learned from a Century's worth of operational practice rapidly become enshrined in our history. If we take doctrine as an accumulation of what has worked best in the past, this distillation of history is an essential part of the formulation process. The next logical step is development of future practice through conceptual thinking. This apparently seamless transition from the best of the past to an enlightened future is at once attractive, but frustratingly elusive. In the first article in this Review, I attempt to answer the question, in slightly greater depth, as to why we study air power history. This article highlights the dangers of looking at the less relevant periods of history, identifying the wrong lessons and then not learning any at all. These dangers lurk behind every corner, whatever realm of the operational process in which we work. If, however, our analytical skills are well honed, there is a greater chance of sound judgement and clarity of future thinking. Studying military history in general will play an important part in the process. And a sound knowledge of air power history will make rational argument more probable with wrongly chosen precedents less likely. The final argument is that it is incumbent on us all to know at least part of our own story.

The second article has been submitted by Colonel (retired) Philip Meilinger USAF, whose work on air power – historical, current and future – is no stranger to this Journal. Colonel Meilinger gives a typically robust American approach to the use of precision weaponry covering the use of cluster bombs and emotive topics such as depleted uranium rounds. He argues that collateral losses and the like are small in comparison with the brutality of warfare both in an earlier age, and in the genocide operations in areas such as Rwanda or the Balkans. Losses – especially when inflicted by accident – are serious and regrettable; Meilinger argues that they are on a very much smaller scale than through landmines or disease and famine. He therefore concludes with the affirmation of air power as a weapon of first resort because it is so comparatively discriminate and effective. This article is also appearing in the parallel issue of the USAF Aerospace Power Journal. As part of our ongoing policy of extending awareness of British thinking on air power, we intend to publish a number of pieces at the same time, particularly where there is evident subject overlap.

The next article was provided by Flight Lieutenant Craig White. It was based on thesis work towards his MA in International Studies and stands as an excellent example that academic work of a high standard can be produced irrespective of rank and background. It will hopefully serve as encouragement to others to undertake such research and submit it for publication as part of the ongoing debate. White echoes Colonel Meilinger's advocacy of the use of precision weaponry and concludes that, even where classic air power targets are at a minimum (such as against guerrillas or light infantry), it will still be the weapon of first political choice.



Human nature is such that we all prefer to measure success in a quantifiable and precise manner. But the reality of warfare is such that the number of enemy aircraft shot down or tanks 'plinked' may not actually be relevant to the effect that the Joint Commander has sought to achieve. Nowhere is this more difficult than in the field of coercion where psychology and perceptions replace the comfort zone of counting body bags. Dr Karl Mueller gives an excellent overview of the theory and practice of the use of coercive air power. Because the effects are so difficult to measure, the competing theories into what will work, and why, can be exceedingly complex. Dr Mueller's article certainly lives up to its title in providing a primer for military strategists and should be mandatory reading for any campaign planner.

The penultimate article has been put forward by Squadron Leader Mark Stubbs. It was his final essay submitted as part of the Intermediate Command and Staff Course. It is therefore constrained by the syllabus requirements to 2,500 words. It is, however, an excellent example of what can be achieved within a limited space and displays considerable analytical skill. Many students view their essay writing as a necessary evil to be completed with the utmost despatch. Stubbs shows that an extremely worthwhile product can be achieved. He properly emphasises that no particular environment will necessarily always be decisive in modern warfare and that a truly joint approach is the only real way forward.

This theme of joined-up war fighting continues in the final article in which I emphasise the importance of conducting deception operations as an integral part of the overall campaign. This cannot be approached with the mind set that deception is optional or can be bolted on at a later date. As pressure to minimise casualties continues to increase, deception operations must be seen as a vital force multiplier – as history, to complete the circle – has consistently demonstrated.



# Why Study Air Power History?



The lessons of history are never clear. Clio is like the Delphic oracle: it is only in retrospect, and usually too late, that we understand what she was trying to say.

Michael Howard <sup>1</sup>

‘It’s the steady force-feeding of the same old horse pills of history’

An anonymous naval captain <sup>2</sup>

In his essay on ‘The Use and Abuse of History’, Professor Howard highlighted the problems of drawing from history and either failing to heed the lessons, or drawing the wrong ones. He notes a ‘depressingly close analogy’ between the mistakes made by Austrian commanders in their conflict with Napoleon in Italy in 1796 and those committed by the British in the desert operations against Rommel in 1941; both were overly concerned with security, or what today may be called ‘force protection’ – an analogy with potentially very worrying overtones. The scope for the misuse of history was typified by the classic situation in which the French General Staff applied the lessons of First World War trench warfare in their preparations for their defence against the Third Reich. At first sight this may seem excusable, but a more detailed examination shows that the French actually applied the lessons of 1916 rather than the more relevant ones of 1918. Ironically the staffs of the Wehrmacht and the Luftwaffe had expended considerable energy in the inter-war years analysing the lessons of history, trends in technology and the likely impact on warfare.<sup>3</sup> In some instances their doctrine, such as Blitzkrieg, had been given almost mystical status.

There is a further problem in this area and that is one of causal links. It is very easy to say that because an individual was present at a given juncture of time that he was influenced by it, and this therefore was key to the formulation of future policy. This is particularly relevant to the likes of Trenchard and Harris. It is very easy to draw causal conclusions from the latter’s experiences in colonial policing duties and apply them to the strategic bomber offensive. It may actually be more useful to look at Harris’s experiences operating over Passchendaele, or attempting to shoot down Zeppelins over London. A rigorous historical approach should highlight the truth of the matter; and if this is too optimistic an outlook, then awareness of the pitfalls will at least help.





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If the study of history is so fraught with problems, and either so easy to get wrong or difficult to get right, depending on one's view of the contents of the glass, why bother at all? To many military men and women, the benefits of the allied disciplines of doctrine, strategy and military history could either be summarised on the back of the proverbial cigarette packet, or more likely consigned to a broom cupboard at the end of a corridor only to surface when a search is undertaken for some arcane piece of memorabilia that had once been donated by the venerable senior officer now scheduled to revisit the haunts of his former glory. The concept of recording today's events with an eye to the interests of future historians combing the archives seems to many to be preposterous<sup>4</sup> – particularly in an era where capacity for routine staff work is occupied by the latest management fad or the accumulation of apparently meaningless statistics. These practical constraints on the acquisition and retention of primary source material are further exacerbated by the limits on intellectual capacity; the modern serviceman or woman needs an almost encyclopaedic knowledge of everything from their operational systems through to the latest legislation on health and safety or individual rights.

It could therefore be argued that all that is required from history is the accumulation of the recent experiences of the latest operations, detachments and trials. The reality, however, is that this distillation of 'what has worked best' is the seed corn of tactical level doctrine.<sup>5</sup> The same academic approach produces operational doctrine and so on. By stealth, therefore, history, albeit recent history, is an indispensable part of every day military business – even if many would deny their link with either doctrine or study of the past! With the rate of change of technology so marked in the field of air power, it is particularly important that we develop the analytical skills necessary to sort wheat from chaff. Even if we accept the *de facto* omnipresence of military history, is there a requirement to study the discipline more formally? The real danger in not doing so is evident from the transition between the deceptively simple accumulations of 'what has worked best' to the calamitous pitfalls described by Professor Howard.

The question 'Why study the history of a particular campaign or air operation?' or the somewhat broader debate on why we should study military history is of interest to more than just the potential military historian. The question has equal validity for academics across a range of fields, diplomats, officials, journalists and indeed anyone who is likely to cite history, or even a humble precedent, in the course of their routine business. Such a wide-ranging audience is entitled to a comprehensive answer, starting with an examination of why we should study history at all. This paper will then look at the nuances of military history as an extension of the discipline prior to reappraising the benefits and pitfalls of the subject in the wider field of strategy and doctrine. Wherever possible, air power examples have been chosen to populate this paper.

## **WHY STUDY HISTORY (AND WHAT IS IT)?**

This question is at the heart of all historical endeavour and is the essence of the study of the past. At the same time, it is the bane of student historians at all levels; those in schools can attempt to duck the issue by recourse to a dislike of maths or



whatever the alternatives may be. But undergraduates and the vast majority of their more learned peers will have had to give some thought to this issue and the wider discipline of historiography. The literature is inevitably extensive and, almost equally inevitably, much of it is impenetrable on first inspection. Some authors seek to ascertain what history actually 'is'.<sup>6</sup> Others 'pursue' the subject or write 'on history' itself.<sup>7</sup> Yet more actively 'defend their studies' <sup>8</sup> while their colleagues ally history to social theory.<sup>9</sup> An exhaustive review of these theories is well beyond the scope of this paper, with only room for a cursory examination; the curious are recommended to consider the works footnoted as useful starters.

Professor Howard has argued that there is no such thing as 'history'.<sup>10</sup> He contends that the subject is merely what historians have written and that they, by their very nature, are an integral part of the process. This means that no matter how objective they attempt to be, historians imbue their work with their own values and cultural perspectives – and this is before perceptions and prejudices are superimposed. The historiography of the bombing of Dresden is a stark example of this, especially as one of the earliest accounts was published by the now infamous David Irving.<sup>11</sup> There can therefore be no absolute account of history and nor can it be considered to be a closed box. One author has suggested that 'history is an argument without end'. Historical research can be pursued by a logical method in which a thesis is postulated, tested against the evidence, and reviewed if necessary. History is, however, very much a humanity rather than a science, not least because the principle of repeatability cannot be applied; successive generations of scientists should be able to replicate the findings of their predecessors – historians approach what are ostensibly equivalent occurrences from vastly differing perspectives with the ensuing ranges of interpretations. The historian must consider not only what may have happened in the past, but also attempt to infer what conditions were like. In this emerging context, the historian can begin to postulate how the social, intellectual and political structures developed. From this, the logical progression is to begin to analyse why events then occurred. At no stage, however, can the historian actually know what people thought; even supposed contemporaneous diaries are fraught with potential difficulties. But this does not render the process of enquiry any the less worthwhile. An analytical approach is, of course, essential in any academic endeavour; the postulation of a thesis and the subsequent arguing of evidence are fundamental.

Professor Marwick takes recourse in the dictionary definition of history – learning or knowing by enquiry. History is therefore an interpretation of the past in which 'a serious effort has been made to filter out myth and fable'.<sup>12</sup> It should therefore come as no surprise to confirm that not all that purports to be history is any more than myth, fable and legend. It is worth dwelling on the meanings of these terms. A myth is defined as a 'traditional narrative usually involving supernatural or imaginary persons'; a fable is a 'story, especially a supernatural one, not based on fact'; and a legend is a 'traditional story sometimes popularly regarded as historical but unauthenticated'.<sup>13</sup> If we combine Howard and Marwick it becomes immediately evident that some of what we may have solemnly considered to be history is no more than earlier scholars' interpretation of myth and legend – the tales of King Arthur and his Knights of the Round Table spring instantly to mind, but there are arguably as many legends





4 emanating from the Strategic Bomber Offensive in World War II or the Vietnam War.<sup>14</sup> Human nature is such that we are intrinsically fascinated by the past, by myths and legends, history and archaeology (or at least as depicted on popular television series).<sup>15</sup> Unless we are content to swallow unthinkingly this diet of what may potentially be fables, we must have recourse to a more scholarly approach to the past.

It is not, however, sufficient to take the works of an eminent scholar down from their dusty position on the library shelves and be confident that we have a work of pure history in our hands – no matter how eminent the historian. In his biography of A J P Taylor, Adam Sisman describes one of the most famous (and controversial) historians of the twentieth century. His subject was the author of major works of considerable learning such as *The Struggle for Mastery in Europe* (Oxford, 1954); he was also described, somewhat disparagingly, as being the ‘star in his studio’, referring to his hugely successful television appearances.<sup>16</sup> Taylor also wrote *The Origins of the Second World War*;<sup>17</sup> this was immediately controversial, not least because of its thesis that

*Taylor wrote The Origins of the Second World War; this was immediately controversial, not least because of its thesis that Hitler had stumbled into his foreign conquests rather than them being part of a pre-ordained plan...*

Hitler had stumbled into his foreign conquests rather than them being part of a pre-ordained plan. The controversy and debate continue today with books reappraising his work.<sup>18</sup> Woe betide the putative history student who only reads one book on a given subject!<sup>19</sup>

The complexities of the discipline should not, however, act as a deterrent. Knowledge of the past is an essential part of our attempts to understand the present. Marwick compares the history of the community to the memory of an individual.<sup>20</sup> In a complex society, the analogy can arguably be extended to a comparison between a sophisticated system of historical analysis and the genetic detail recorded on DNA. The direct implication is that without such collective memory, a society would be little more than an amorphous mass. In the same way that DNA can be ‘fingerprinted’, so a society, from its earliest beginnings in a cave, will bear the imprints of its collective experience. In its earliest guise this will have been a mix of practical experience on hunting and fire making techniques. These will, in time, have been embellished with superstition, ritual, songs and legends. As society has matured, these have become more complex, with neighbouring clans telling of their conquests, rivalry and battles whilst lamenting hard times and defeats. Some of these have been committed to text, others have been passed down orally, in song and verse.<sup>21</sup> So tradition has often matured into a primitive form of history that has, in turn, served to solidify the fault lines between societies; a glance at the use and misuse of history in the Balkans



highlights the dangers of this process. An understanding of the rifts, nursed grievances and remembrance of earlier glories became essential fodder for the embryo statesmen and warriors. The direct inference, therefore, is that the better an understanding we require of the situation in which we find ourselves depends crucially on our appreciation of the route taken by all concerned. This provides a more than sufficient justification for the study of history as a window on the past through which we can interpret contemporary actions more rationally.

If we hope to take our efforts one step further and learn lessons from history, the study will almost certainly need to be more precise and more exacting. Thucydides apologised for the lack of romance in his history of the Peloponnesian War, pointing out that he would be content if his work was to be 'judged useful by those inquirers who desire an exact knowledge of the past as an aid to the understanding of the future'; in short, it was to be a possession for all time.<sup>22</sup> The search for lessons from history is almost as frustrating a task as seeking to find the Holy Grail or Camelot. For some students, historical lessons are analogous to a legal precedent that can be applied with precision and certainty. The reality of the technical application of legal precedent, however, shows that this is far from being a simple process. The case has to be studied in full and the judgement analysed to reveal the *ratio decidendi* (that which was decided) and separate this from the clutter of what was also said (*obiter dicta*). The circumstances of the case have to be directly similar and relevant to those on which our learned counsel is seeking to rely. This is genuinely frustrating in law (or highly remunerative depending on one's standpoint), but can be almost impossible in history. One can learn principles of strategy from Clausewitz or Jomini, but the opportunity to replicate Napoleon's victories is unlikely beyond the sand table or the war game.



**The Japanese surrender was officially carried out aboard USS Missouri on 2nd September 1945.**

Exact comparisons across the decades provide neither a blueprint for action <sup>23</sup> nor precise guidance around the pitfalls to be avoided. But this does not mean that an examination of the processes involved by which a group of nations arrived at the brink of war is not worthy of study. By the same token, analysis of the structure of a society may offer valuable insight into the forces at work that resulted in the events that subsequently evolved. This latter school of thought (known as *Annales* after their Journal) emphasised the importance of the study of humanity and mankind as an intrinsic part of the study of history.

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6 History may therefore be studied for a range of reasons from the eradication of myth and legend through to the impact of human nature on the development of society. Whatever theory is chosen to justify the chosen course of study, it could be argued that the intellectual exercise is worth the while **in its own right**. In the same way that an athlete trains by running or in the gym, rather than because of a need to get from A to B, so the historian is exercising powers of judgement, analysis and dedication that have relevance both to enhancing our understanding of the past and to improving our appreciation of society. Mankind's continuing reliance on force as an instrument of policy makes warfare as enduring a part of society as economic or social order. Although it is also therefore worthy of study in its own right, it has other claims on our attention.

## WHY MILITARY HISTORY?

At the simplest level, military history is worthy of study for pure entertainment value alone. A glance through the schedules of even the terrestrial television channels will attest to the popularity of the genre ranging from collections of rare colour footage of the Second World War ('Because war is not black and white') through to reappraisals of key events – often on their anniversaries. Similarly, the local high street bookstore (in the United Kingdom and North America at least – it is less popular in Germany for example) will almost invariably contain well-stocked sections on military history. Specialist military history book clubs flourish and there is a lively trade in second-hand material from enthusiasts' colour guides featuring the camouflage of their favourite aircraft type to the memoirs of Tedder and Douglas. War walks remain popular events as do re-enactments of famous or local conflicts.

There is a duty beholden to most servicemen to have some knowledge of military history. This can take the form of natural pride in the activities of the regiment or squadron to which the individual has become part. The more cynical approach points out that the occasional passing of examinations may act as a spur for the study of military history. A wider knowledge of that particular form of warfare quickly follows with, for example, considerable study into air or sea power and its application. At its most basic level, this takes the minimalist form of merely knowing the story – in other words, basic narrative history detailing the sequence of events and describing the factors evident to the participants. The newcomer to military history who is seeking to research a given topic may be well advised to seek out an authoritative account to act as a platform from which to branch out.



**A Tomahawk missile launched from a US Spruance class ship.**

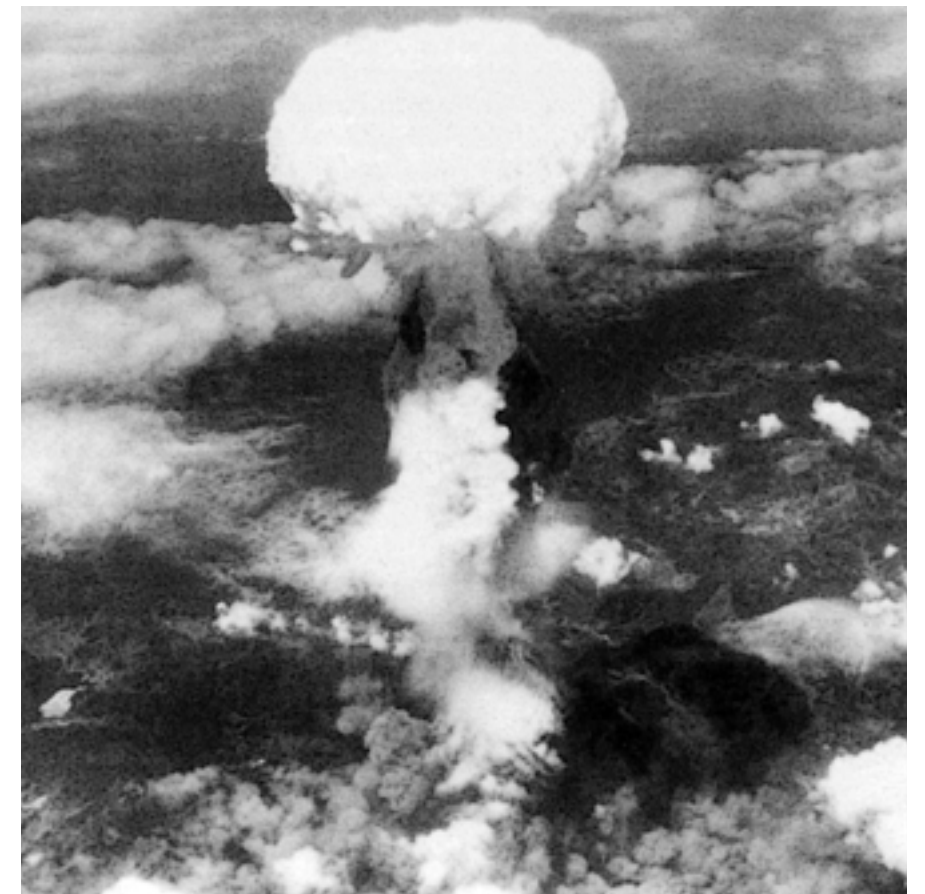
*Mankind's continuing reliance on force as an instrument of policy makes warfare as enduring a part of society as economic or social order*

John Terraine's *The Right of the Line, The Royal Air Force in World War II* <sup>24</sup> is a classic example that has been recommended to generations of staff college students and of course has considerable appeal to a wider readership. An alternative could be the official history written shortly after the event by Denis Richards and Hilary St George Saunders and published in 1953/54 .<sup>25</sup> The virtue in following such a route is that it is often well trodden having served so many as a common starting point.

Military history (and indeed history more generally) can go beyond the entertaining, inspirational,<sup>26</sup> descriptive and informative. It can also be critical, educational and prescriptive.<sup>27</sup> The critical application of history is essential if we are to avoid the myths and legends – or what J F C Fuller referred to as the ‘Obsession of Traditions’.<sup>28</sup> Myths inevitably arise for many reasons. On one hand there is a natural reluctance to speak ill of the dead – especially when they may have paid the ultimate cost with the loss of their own lives and those of their colleagues. The counter argument is that some history is written specifically to excoriate the subject (Haig being a prime example). Some myths are maintained as part of either an ongoing, or long expired, information operation (propaganda in old money) or campaign; it may well be that it suits most concerned to continue this as could be argued with nuclear deterrence theory or coercion.<sup>29</sup> Others have arisen from an uncritical acceptance of cinema renditions of famous events such as the Battle of Britain,<sup>30</sup> or more recently, the capture of Enigma machines and codes from German U-Boats.<sup>31</sup> The elimination of myths – past and present – is essential if history is to be used in a genuinely educational sense.

*Military history (and indeed history more generally) can go beyond the entertaining, inspirational, descriptive and informative. It can also be critical, educational and prescriptive*

Knowledge of history, or its influence on decision makers, is frequently cited. Churchill wrote, and was in turn influenced by, history. Eden was determined not to follow ‘The Appeasers’ and this was evident in his approach to Nasser in the lead up to the Suez crisis. Social scientists have developed their theories in the uses and abuses of history in decision making with *Thinking in Time: The Uses of History for Decision-Makers* by Neustadt and May as a classic example.<sup>32</sup> Detailed analysis of a single event (The Cuban Missile Crisis) is painstakingly described in *Essence of a Decision* by Graham T Allison.<sup>33</sup> But this process is fraught with difficulties if the wrong lessons of history are even identified, let alone learned and then internalised. Professor Howard points out the old adage that ‘History does not repeat itself – historians repeat one another’.<sup>34</sup> It is also extremely easy for historians to raid ‘the storehouse’, to use Professor Colin Gray’s analogy, in order



**Over 73,000 people were killed when the 10,000 lb – Fat Man atom bomb was dropped on Nagasaki.**





to locate examples that will immediately support virtually any hypothesis.<sup>35</sup> The controversy that surrounded the publication of Robert A Pape's *Bombing to Win – Air Power and Coercion in War* <sup>36</sup>is highlighted by the follow-on book to be edited by Benjamin Frankel – *Precision and Purpose, Debating Robert A Pape's Bombing to Win*.<sup>37</sup>

The reality is that cause-and-effect is often very difficult to prove with no 'directing staff pink solution' to every episode. Even where linkages appear to be either present or logical, there is a lamentable tendency for historians to join events where none exists. Rather the historian should highlight the dynamic processes where the Clausewitzian frictions of weather, faulty decisions and personalities impact on unique sets of circumstances. That no blueprint emerges does not make the study any less worthwhile. Professor Geoffrey Till has suggested that 'the chief utility of history for the analysis of present and future lies in its ability not to point out lessons, but to isolate things that need thinking about..'<sup>38</sup> A refinement of this view would be to suggest that historical examples can, and indeed should, be used as a set of intellectual tools. These may be pertinent to every putative user of history, but it could be readily suggested that the military practitioner has more need of historical example than most.

In the first instance history, or rather historians, are only too willing to use the discipline to criticise soldiers, sailors and airmen for their failings in battle whether real or imagined. Alan Clark's emotively entitled book of the First World War is a suitable example whereby the British (and Empire) leadership was unfavourably compared with the men 'who fought like lions',<sup>39</sup> but were led by the 'Donkeys'. The shelves are inevitably full of autobiographies; some are merely bland while many more, equally inevitably, are self-serving. The biographies, with notable exceptions (especially when the subject and his or her immediate family have long departed and are therefore unlikely to be awkward guests at the book launch), tend towards being hagiographies leaving hapless readers to wonder how the War in question was not won earlier by the noble deeds of the subject.<sup>40</sup> Willingness to pronounce on failure is part of human nature. By the same token, it is equally natural to select the lesson from history that supports the chosen thesis. The new recruit at Sandhurst, Dartmouth or indeed Cranwell now that some history has been restored to the syllabus of the latter, is faced with an unenviable morass of material to ingest if all of the collected wisdom is to be distilled into a bedrock of experience.

Most, if not all, military practitioners willingly extol the virtues of both education and training as being necessary throughout their careers. But training will only cover some 80% of the ground as there is no substitute for the 'real thing' with lives at stake and much else to be lost or won. No amount of simulation, special effects or exercise injects can replicate this – no matter how realistic the training may be. Professor Howard equates this to a surgeon whose only operation is a life saving one after a career spent practising on dummies.<sup>41</sup> Although this may seem somewhat far-fetched, he goes on to suggest that fixation on running an army (or elements thereof) may become an end in itself – process becomes all-important. Howard advocates the study of past conflicts as one possible way in which the inexperienced practitioner can prepare him or herself for the acid test. Lieutenant General Dempsey who commanded a corps (and later the second Army in Normandy) under Montgomery was a keen exponent of the battlefield tour who had an extremely well honed sense of the terrain on which he was about to fight.<sup>42</sup>

History must be studied in breadth, depth and arguably most importantly in a proper context, not least because conflict is essentially between societies or elements thereof. Even a cursory inspection of the writings of Machiavelli reveals as much about the world in which he lived and operated as it does about his own thinking – the two are totally intertwined.

*History must be studied in breadth, depth and arguably most importantly in a proper context, not least because conflict is essentially between societies or elements thereof*

**A Syrian MiG-17 attacking Israeli ground target during the Middle East wars.**



## STRATEGY

The inevitable refinement on the use of military history and its influence on operations at all levels is to consider the history of martial thought (as opposed to General Hindsight). In his book, *Studies in British Military Thought, Debates with Fuller and Liddell Hart*, Professor Brian Holden Reid has described the ‘gray area’ (sic) between military history and the history of ideas.<sup>43</sup> In this chapter, Holden Reid goes on to discuss the importance of Fuller’s work *The Foundations of the Science of War*<sup>44</sup> in which the latter proclaimed that the art of war was actually founded on definite principles and laws. This attempt to order the chaos of the so-called ‘Great War’ was not an isolated phenomenon, with a revival of interest in eighteenth century philosophers as well as relatively original work. Nor was the aftermath of conflict a stranger as a catalyst for thinking on the principles of war. Clausewitz and Jomini both wrote extensively on Napoleon’s victories in the years after Waterloo. Their work still repays reading because of the scope and depth of their analysis.

Clausewitz defined strategy as being the ‘use of the engagement for the purpose of the war’.<sup>45</sup> He goes on to point out that the strategist will define the aim for the entire operational side of the war. Without either wishing or needing to disappear down the proverbial rabbit hole of definitions, it is worth citing Colin Gray’s adaptation of Clausewitz with strategy being ‘the use that is made of force and the threat of force for the ends of policy’.<sup>46</sup> Given the importance of both deterrence theory and coercion in modern warfare the distinction is worth making. What is arguably more important to the scholar and military practitioner alike is the subsequent influence of their writings.

Some scholars, such as Clausewitz and Jomini, have been studied and read by countless generations of students in military colleges and wider academe. It has, however, to be said that few actually read, or understand, the whole works with many content to regurgitate the same old tired clichés – often out of context. Clausewitz’s work has been subject to much secondary analysis, and comprehensive treatment of this is outside the scope of this paper. Those interested could do worse than to read



the introductory essays by Michael Howard and Bernard Brodie in Howard and Paret's translation of *On War*.<sup>47</sup> The air power student will be aware of the writings of the Italian theorist Giulio Douhet whose *Command of the Air* is widely considered to have been an influential tome in the inter-war years. Dr Philip Meilinger points out that translations of excerpts of this book were available in US Air Service circles as early as 1923 and that Billy Mitchell (the famous US air power theorist) had met Douhet the year before.<sup>48</sup> *Command of the Air* was, however, never required reading at the RAF Staff College and arguably had no influence on strategic air power thinking in the inter-war years in the United Kingdom.<sup>49</sup> Given the undoubted influence of the Army Staff College at Camberley on its infant sibling (not least the new Commandant's yearning to replicate the stables and opportunities for riding) it is highly likely that Fuller would be at least as widely read at Andover as at Camberley. Fuller's suggestions, in 1923, that henceforth land and sea forces could be used to occupy territory 'after a moral victory had been won on land by aircraft' was an early taste of the strategic bombing debate that continues to arouse controversy.<sup>50</sup> Further discussion on the development of this theory is again outside the scope of this paper, but it is worth differentiating what writing was influential **at the time** as opposed to what subsequent authors have taken from contemporary library shelves and then ascribed to earlier times. The need to situate events in their own context is, after all, at the heart of military history and thinking.

The answer as to why we should study history, military history or strategic thinking varies from an intellectual exercise in its own right, through the need to know the story and on to Dominick Graham's 'spectrum of categories: entertaining, informative, descriptive, inspirational, critical, educational and prescriptive'.<sup>51</sup> If we extend this to encompass the notion of history as an interpretation of the past in which a serious attempt is made to filter out myth and legend, the role of the discipline becomes both more demanding and more necessary. Given mankind's continuing reliance on the use of force as an instrument of policy, our interest in the past is ever more important. We need to shed the myths, fables and legends, of which military history has more than its fair share, if we are to learn anything from history. Tradition and fable have often matured into the fault lines between nations and between peoples. If we are to have anything approaching a reasonable understanding of the complex situations in which we are increasingly likely to find ourselves, dexterity with the analytical tools provided by the study of history is essential.





## NOTES

- 1 Michael Howard, 'The Use and Abuse of History', in *The Causes of War, and other essays*, Temple Smith, London, 1983, page 195.
- 2 The unfortunate naval captain quoted was a student on the Higher Command and Staff Course at the Joint Services Command and Staff College. The article by Robert Fox 'Combined college launches Forces into a new era', *Daily Telegraph*, February 28, 2001, was published to coincide with the formal opening of the new building by HRH Prince Philip.
- 3 For a snapshot of the lessons on tank warfare see Alex Danchev, *Alchemist of War, the Life of Basil Liddell Hart*, Weidenfeld and Nicholson, London, 1998, page 226. On the Luftwaffe see James S Corum, *The Luftwaffe, Creating the Operational Air War 1918 –1940*, University Press of Kansas, 1997, Chapters 1 and 2. See in particular page 58 et seq for the establishment of the air doctrine process.
- 4 Interview with Mr Seb Cox, Head of the Air Historical Branch for the Royal Air Force. It remains a constant bane of Branch life trying to ensure that RAF Form 540 Operational Record Books are submitted in a comprehensive, timely and useable format. An example that emanates from the other end of the spectrum occurred when this author was specifically tasked with writing the 29 (F) Squadron records when the unit was deployed to the Falklands in 1982.
- 5 For a more detailed review of The Nature of Doctrine see Peter W Gray, 'Air Power and Joint Doctrine, An RAF Perspective' in *The Royal Air Force Air Power Review*, Volume 3 Number 4, page 5.
- 6 See for example, E H Carr, *What Is History*, first published by Macmillan in 1961; a second edition followed in 1987 and has been reprinted many times.
- 7 John Tosh, *The Pursuit of History; Aims Methods & New Directions in the Study of Modern History*, second edition, Longman, London, 1991 and Eric Hobsbawm, *On History*, Weidenfeld and Nicholson, London, 1997.
- 8 Richard J Evans, *In Defence of History*, Granta Books, London, 1997.
- 9 Peter Burke, *History and Social Theory*, Polity Press, Cambridge, 1992.
- 10 Michael Howard, *The Lessons of History*, Oxford University Press, Oxford, 1991, page 11.
- 11 David Irving.
- 12 Arthur Marwick, *The Nature of History*, third edition, Macmillan, London, 1989, page 3.
- 13 *Concise Oxford Dictionary*, Ninth Edition.
- 14 For an excellent and scholarly review of Arthur in myth and reality see Leslie Alcock, *Arthur's Britain, History and Archeology AD 367 – 634*, Penguin, London, 1971.
- 15 Take the *Timewatch* series for example. Alternatively, on the date of writing this piece terrestrial TV broadcast three archaeological programmes, *Meet the Ancestors* (BBC2 22 Jan 2001), and two programmes based on maritime studies highlights the popularity of the genre.
- 16 These did little to endear Taylor to the Oxford University establishment. The quotation was taken from an article in the *New Statesman* cited in Adam Sisman, *A J P Taylor, A Biography*, Mandarin, London, 1995, page 265.
- 17 A J P Taylor, *The Origins of the Second World War*, first published by Hamish Hamilton in 1961 and still in print the world over.
- 18 Gordon Martel (Ed), *The Origins of the Second World War Reconsidered: The A J P Taylor debate after twenty-five years*, Routledge, London 1986.
- 19 For what it is worth, a better bet on the subject would be either P M H Bell, *The Origins of the Second World War in Europe*, Longman, London, 1986 or R J Overy, *The Origins of the Second World War*, Addison Wesley Longman, Harlow, 1987.
- 20 Marwick, *The Nature of History*, page 14.
- 21 An excellent example of this genre includes *Beowulf* which was composed near to the end of the first millennium of our era; it is a great tale of epic proportions. An excellent translation by Seamus Heaney was published by Faber and Faber in 1999.
- 22 Taken from *The Landmark Thucydides, A Comprehensive Guide to the Peloponnesian War*, Robert A Straser (Ed), Touchstone, New York, 1998, page 16.
- 23 Tosh, *The Pursuit of History*, page 17.
- 24 Published by Hodder and Stoughton, London, 1985.
- 25 *The Royal Air Force 1939 – 1945: Vol 1 The Fight at Odds, Vol 2 The Fight Avails, Vol 3 The Fight is Won*, HMSO, London, 1953 et seq.
- 26 See for example, Air Commodore Graham Pitchfork, *Men Behind the Medals*, Leo Cooper, London, 1998.
- 27 Dominick Graham, 'Stress Lines and Gray Areas: The Utility of the Historical Method to the Military Profession', in David A Charters, Marc Milner and J Brent Wilson (eds), *Military History and the Military Profession*, Praeger, Westport, page 147.
- 28 J F C Fuller, *The Foundations of the Science of War*, Hutchinson, London, 1926, page 24.
- 29 See the extensive list of air power myths offered by Noel F Parrish in 'The Influence of Air Power upon Historians' in Lieutenant Colonel Harry R Borowski (ed), *The Harmon Memorial Lectures in Military History, 1959 –1987*, Office of Air Force History, USAF, Washington DC, 1988, page 31: these myths include Douhet, Dresden, Linebacker Losses and so forth.
- 30 For a full analysis of this see Tony Aldgate, 'The Battle of Britain on Film' in Paul Addison and Jeremy A Craig (Eds) *The Burning Blue*, page 207.
- 31 For an analysis of the former, see Peter W Gray, 'The Battle of Britain – so we already know the story?', *Royal Air Force Air Power Review*, Vol 3, No 3, Autumn 2000, page 17.
- 32 Published by Free Press, New York, 1986.
- 33 Graham T Allison, *Essence of Decision: explaining the Cuban Missile Crisis*.
- 34 Michael Howard, 'The Use and Abuse of History', in *The Causes of War, and other essays*, page 191.





- 35 Colin S Gray 'History for Strategists' in Geoffrey Till (ed), *Seapower: Theory and Practice*, first published by Frank Cass as a special issue of *The Journal of Strategic Studies*, 1994, page 10.
- 36 Published by Cornell University Press, Ithaca, 1996.
- 37 To be published by Cass.
- 38 Geoffrey Till, *Maritime Strategy and the Nuclear Age*, Macmillan, London, 1982, pages 224 – 5.
- 39 Alan Clark, *The Donkeys*, Hutchinson, London, 1961.
- 40 A worthwhile example of a biography that aimed to balance many years of vilification was John Terraine, *Douglas Haig, The Educated Soldier*, first published by Hutchinson in 1963 and reissued in 2000 by Cassell, London. Andrew Boyle's biography of *Trenchard* is now very dated and such a worthy subject is due to be revisited. The title alone confirms the trend with Anthony Furse, *Wilfrid Freeman, The Genius Behind Allied Survival and Air Supremacy 1939 to 1945*, Spellmount, Staplehurst, 1999.
- 41 Michael Howard, 'The Use and Abuse of History', in *The Causes of War, and other essays*, page 194.
- 42 Carlo D'Este, *Decision in Normandy*, Harper, London, page 60.
- 43 Brian Holden Reid, *Studies in British Military Thought, Debates with Fuller and Liddell Hart*, University of Nebraska Press, Lincoln, page 33.
- 44 Colonel J F C Fuller, *The Foundations of the Science of War*, Hutchinson, London, 1926.
- 45 Carl von Clausewitz, edited and translated by Michael Howard and Peter Paret, *On War*, originally published by Princeton University Press and subsequently included in the Everyman Library in 1993, page 207. This version is used for page numbering and can be recommended for the introductory essays.
- 46 Colin S Gray, *Modern Strategy*, Oxford University Press, Oxford, 1999, page 17.
- 47 Michael Howard and Peter Paret, *On War*, originally published by Princeton University Press and subsequently included in the Everyman Library in 1993.
- 48 Colonel Philip S Meilinger, *The Paths of Heaven, The Evolution of Airpower Theory*, Air University Press, Maxwell AFB, page 33.
- 49 Meilinger, *ibid*, page 32. See also Robin Higham, *The Military Intellectuals in Britain, 1918 – 1939*, Rutgers University Press, 1966 pages 257 – 259 and Wing Commander R A Mason, *The Royal Air Force Staff College 1922 – 1972*, Bracknell Staff College Pamphlet 1972, page 5 in which Trenchard as described as using the words 'Command of the Air' in his inaugural address long before Douhet had been heard of in these shores.
- 50 Colonel J F C Fuller, *The Reformation of War*, Hutchinson, London, 1923, page 148.
- 51 Graham, 'Stress Lines and Gray Areas: The Utility of the Historical Method to the Military Profession', page 147



The RAF took delivery of its first four C-17 Globemaster in May this year. The aircraft are serving with 99 Squadron.



# Precision Aero space Power, Discrimination, and the Future of War







**D**uring Operation Allied Force over Kosovo, there were some observers who questioned the tactics of NATO airmen. No less worthy than Senator John McCain, a fighter pilot himself during Vietnam, wondered aloud as to the morality of flying and bombing above 15,000 feet. McCain and others were concerned that bombing from that altitude, where it was ‘safe,’ was inherently less accurate and therefore less humane than if the aircraft had gone lower.<sup>1</sup> These critics were wrong. In the vast majority of cases, NATO airmen flew at the optimum altitude for achieving accuracy, while also fulfilling NATO political demands to avoid risk.

It is the thesis of this essay that air warfare over the past decade has significantly humanized war – if such a phenomenon is possible. Tremendous technological strides in the use of precision weapons, as well as developments in air and space intelligence gathering tools, have made it far easier to discriminate between military and civilian targets, and then effectively strike those military targets. Moreover, such effectiveness has been accomplished with a marked reduction in risk to the attackers. In short, modern air warfare has reduced casualties among both the attackers and the attacked, thus making it an increasingly efficient, effective and humane tool of American foreign policy.



It is true that General Wesley Clark, the NATO commander, directed the airmen to take all precautions to limit friendly losses. Clark realized that the fragility of the NATO alliance during Allied Force necessitated such risk avoidance. Enemy missiles, anti-aircraft artillery and small arms fire can be extremely deadly at low altitude. As a consequence, strike aircraft were directed to stay above 15,000 feet when deploying their weapons. An important question is whether or not this significantly and adversely impacted accuracy. In the vast majority of cases it did not. A brief discussion of new air weapons and their characteristics is necessary.

Precision guided munitions (PGMs) are air-launched weapons that have improved accuracy by orders of magnitude. These weapons are equipped with adjustable fins that allow them to alter course in flight and home-in on their targets. PGMs have several different types of guidance systems – laser homing, inertial, optical or infrared imaging, or the use of GPS (global positioning system) satellite signals. These various guidance systems have strengths and weaknesses: for example, laser guided bombs are highly accurate, but because lasers cannot penetrate clouds, they are unusable when bad weather obscures the target. The most successful new PGMs employed over Kosovo were those using GPS guidance. These are relatively inexpensive but highly accurate weapons that in some cases allow a standoff capability – they can be launched several miles from the target – thereby lowering the risk to the delivery aircraft and crew. Perfect accuracy is not guaranteed – failure of the guidance system, aircraft equipment, or aircrew error means that accidents still happen – but current PGMs have an accuracy that is usually measured in feet.



Although used in Vietnam, PGMs truly came into their own during the Persian Gulf War of 1991. The cockpit videos detailing the accuracy of these weapons were shown continually on television and have become one of the defining images of that war: bombs were seen going down chimneys, through doors, and into specific windows. ‘Airshaft accuracy’ had become so seemingly routine it was now expected. When American aircraft struck Serbian targets in Bosnia in 1995 and Serbia/Kosovo in 1999, PGMs were used almost exclusively in populated areas. Once again, the accuracy of these weapons was extraordinary. Visitors to Serbia were amazed to see radio towers neatly separated from their concrete bases and toppled, while civilian buildings not more than 50 feet away were untouched. In another instance a Serbian defense facility was razed, while buildings on either side were largely unscathed.

*When American aircraft struck Serbian targets in Bosnia in 1995 and Serbia/Kosovo in 1999, PGMs were used almost exclusively in populated areas. Once again, the accuracy of these weapons was extraordinary*



There were mistakes, but the relatively small number of such errors was remarkable. Human Rights Watch states that there were 90 instances during Allied Force when attacking NATO aircraft caused civilian casualties and collateral damage.<sup>2</sup> Most of these occurred in well-reported accidents where bombs went astray or targets were misidentified. For example, in one instance, aircrews were given the wrong target, which they nevertheless precisely hit – the Chinese embassy. In another case, the guidance system of a PGM dropped on an airfield failed, and the bomb landed in a residential area several hundred yards away. On another occasion, an aircraft attacked a bridge just as a passenger train unexpectedly passed over it. It is important to remember that these accidents were relatively infrequent given the number of strikes flown (14,000) and munitions dropped (28,000). It was essential for NATO solidarity that such precision was possible. Moreover, given that several NATO countries had already stated their opposition to a ground assault, it is probable that without a precision air campaign, there would have been no NATO military response whatsoever to Serb ethnic cleansing operations. Even the Serbs themselves realized the extreme accuracy and carefulness of the air campaign. Hence, Belgrade citizens wore shirts with targets painted on them and held rallies on bridges over the Danube – secure in the knowledge that the NATO airstrikes were so precise and so discriminate that they would never have to pay for such foolishness. The charge that dropping these weapons from 15,000 feet was somehow inappropriate simply does not stand up under scrutiny.

*...Belgrade citizens wore shirts with targets painted on them and held rallies on bridges over the Danube – secure in the knowledge that the NATO airstrikes were so precise and so discriminate that they would never have to pay for such foolishness*

For a PGM, maximum accuracy is achieved if it is dropped in the mid-altitude range – from 15,000 to 23,000 feet. This allows enough time for the weapon to correct itself in flight and hit its designated target as close to a bull's eye as possible. If dropped from a lower altitude, the weapon's steering fins will have less opportunity to correct the aim, and the weapon will be less accurate. From the pilot's perspective, this altitude range is also the most desirable if attacking a fixed or pre-planned target. The middle altitudes allow time to identify the target at sufficient distance, 'designate it' (if laser guided), and launch the weapon. In short, for PGMs against a fixed target whose position is already established – which was the case in most of the targets struck in Serbia – the optimum altitude to ensure accuracy is at or above 15,000 feet.

Non-guided munitions – 'dumb bombs' – are inherently less precise than their more intelligent brothers, so their optimum drop altitude is lower than that of a PGM. Even so, acquisition remains a limiting factor – coming in too low makes it nearly impossible to acquire the target, line up, and put the bomb on target. One can imagine how difficult such target acquisition is for a pilot roaring in at 500 feet and 500 knots. At that speed and altitude the pilot generally has his hands full just trying to avoid impacting the ground. As a result, the compromise altitude for the delivery of unguided bombs is around 5,000 feet. This,



however, puts the delivery aircraft right in the thick of fire from ground defenses. Allied Force air commanders resolved this dilemma by keeping aircraft at medium altitudes, but restricting the use of non-PGMs to areas where there was little or no chance there would be civilian casualties or collateral damage.

The difficulty arises when attacking mobile or transitory targets. In such cases the key factor becomes target identification. Is the column below comprised of military or civilian vehicles; if both, which are which? At medium altitudes it is difficult to make such a determination. In this situation, to protect against misidentification it is best to have someone closer to the target. This can be done by a FAC (forward air controller), an aircraft that generally operates at lower altitudes, a UAV (unmanned air vehicle) which is also at a lower altitude and that can relay the video it takes of the suspected target to an analyst that can rapidly determine its identity and relay that information to the airborne aircraft, or spotters on the ground. Once the determination is made by one of these sources, strike aircraft can attack from the optimal altitude.

Problems arose when aircraft at 15,000 feet saw what appeared to be military forces below, but with no FAC, UAV or ground spotters available. In such instances, given the strictures against both civilian casualties and taking casualties themselves, aircrews were in a quandary: they could not positively identify the target and were restrained from going lower to do so. Usually, the pilots elected not to drop their bombs.

There were exceptions. On 14 April 1999 near Djakovica, Kosovo, NATO pilots attacked what intelligence sources had identified and which indeed appeared to be a military column. It is now known the column also contained refugees: as many as 73 civilians were killed in the airstrikes.<sup>3</sup> This is the only known instance in the 78-day air campaign where NATO intelligence sources and aircraft at medium altitude combined to misidentify a target, thereby causing civilian casualties.



**Lockheed U-2 high-altitude reconnaissance aircraft.**

Could this accident have been avoided if the aircraft had been flying lower? Probably. Indeed, NATO changed the rules after this, allowing aircraft in certain circumstances to fly lower to ensure target identification. There is a tradeoff in such instances. Flying lower increases the risk to aircrews due to enemy ground fire, so at what point does the risk of misidentifying a target override the risk of losing a plane and its crew? The Law of Armed Conflict states that an attacker does 'everything feasible' to avoid harming civilians or non-military targets. 'Feasible' is a highly subjective term. Were friendly losses feasible if it meant the shattering of the Alliance, which would have allowed Milosevic to continue his atrocities unchecked?

What has tied together these new weapons to make them so effective is an intelligence, communications, and geo-locating network that relies on assets positioned in space, the air and on the ground. Satellites collect imaging data, relay



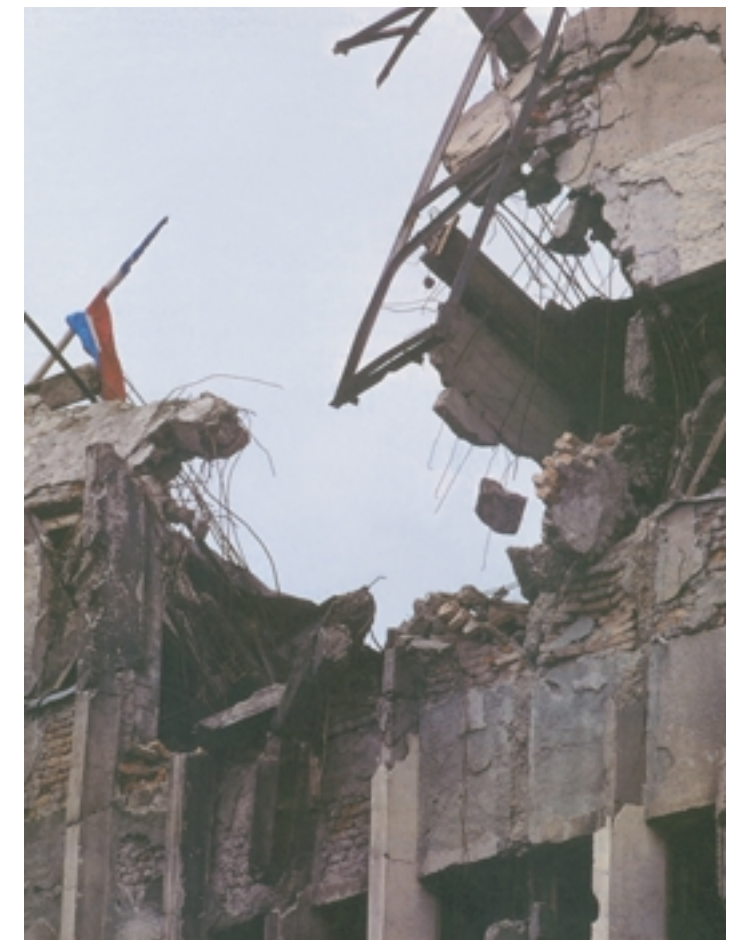
communications and provide precise geographic updates; airborne sensors do much the same tasks from closer in, while also providing more flexibility for short notice operations. Personnel on the ground and in the air receive, analyze, and disseminate the information gathered, while commanders at all levels use it to lead their forces. Over Kosovo, for example, a U-2 flying over a suspected target took video and relayed that video via satellite back to the US. There, analysts determined that the objects captured on film were Serb military vehicles. This information was then fused with three-dimensional terrain data and satellite imagery taken earlier to generate precise geographic coordinates. These coordinates were relayed via satellite to orbiting command and control aircraft, which directed an airborne F-15E strike aircraft to attack. The F-15, using PGMs employing GPS, then knocked out the targets. All of this took place in minutes. As little as one decade ago such an operation would have been considered a pipe dream.

The employment of these new technologies and tactics came together over the Balkans. Allied Force was a unique event because of its almost total reliance on aerospace power. Although the use of ground troops – or even the threat of their use – would have been very helpful in bringing pressure to bear on Serb leaders, NATO ruled out their use early in the crisis. The American public has become ‘casualty averse’ over the past two decades. Mercifully, few Americans died in Grenada, Panama and the Persian Gulf War, and such low losses have now become expected. Casualties, even few in number, are unacceptable. In October 1993, eighteen American soldiers were killed and their bodies dragged through the streets of Mogadishu, Somalia. The revulsion felt by the American people caused the government to withdraw our forces from Somalia.

Partly as a result of this concern over casualties, air forces bore the brunt of the NATO campaign. After 78 days of airstrikes, Milosevic yielded and withdrew his military forces from Kosovo. More surprisingly perhaps, NATO suffered no casualties, while Serb losses were minimized through rigid procedures that governed the use of weapons, tactics, and the selection of targets. Today, what is often called ‘the CNN factor’ complicates the issue further and places even greater pressure on the commander.

In a sense, every bomb, missile or bullet fired by an American airman, soldier or sailor is a political act. When a bomb goes astray and hits a residential area, a Tomahawk missile crashes into a hotel lobby, or a sniper’s bullet kills a pregnant woman getting water at a well, US *foreign* policy – not just military policy – suffers a setback. We can no longer afford to miss. More than that, even when we hit the target, we have to do so almost softly and

*...the good guy – the one in the white hat – never killed the bad guy; he shot the gun out of his hand and arrested him. That is our new standard*



**The telephone exchange at Pristina destroyed by a Laser guided bomb.**

**A USAF F-15E Strike Eagle with a full load of cluster bombs on wing and fuselage pylons.**



*The use of cluster bombs could be seen by some as an anomaly in the continual drive towards the precision employment of air weapons. A strong case can probably be made for the military efficacy and legality of cluster bombs, but that case has not yet been made, and it will have to be made soon.*

airmen must answer. The use of cluster bombs could be seen by some as an anomaly in the continual drive towards the precision employment of air weapons. A strong case can probably be made for the military efficacy and legality of cluster bombs, but that case has not yet been made, and it will have to be made soon.

Similarly, there has been a growing concern over the use of depleted uranium (DU) munitions. DU is an extremely hard substance that is ideal for the warheads on artillery shells or bullets that must penetrate the heavy steel used in armored vehicles. During the Persian Gulf War the US Army and Air Force expended nearly one million such munitions. In the aftermath of the war there was a concern that those rounds exposed military personnel and civilians to dangerous levels of radiation.

with minimal impact.<sup>4</sup> One is reminded of the Western programs on television many years back: the good guy – the one in the white hat – never killed the bad guy; he shot the gun out of his hand and arrested him. That is our new standard.

There is, however, another issue that airmen have not adequately addressed, but which is germane to the subject of discrimination in war. Cluster bombs, which can be air-delivered, are weapons that deploy a large number of baseball-sized bomblets over a fairly wide area. Some cluster bombs dispense landmines, while others dispense anti-armor, anti-personnel, or simple fragmentation bomblets for use against structures, radar sites or runways. Some cluster bombs are precision weapons in their own right – the ‘sensor fused weapon’ consists of forty individually targeted bomblets that home in on the infrared signature of a vehicle. Others are deployed by a ‘wind corrected munitions dispenser’ that makes the cluster bomb canister accurate to within thirty feet. Still other cluster bombs have no precision guidance at all.

The problem: an estimated 5 percent of cluster bomblets fail to explode on impact, thus making them, essentially, anti-personnel landmines. International agencies are already jumping on this issue, and airmen should expect these groups to push for a ban on the use of cluster bombs.<sup>5</sup> Although a total prohibition would seem extreme, airmen must address this issue head-on. How many cluster bombs have been employed over the past decade and by whom; how effective have they been against their intended targets; what is their accuracy in actual operations; what percentage are duds; how easy are these duds to defuse after the conflict has ended; and how many noncombatants have been killed or injured by unexploded bomblets? These are all questions that





The shell fragments left behind could cause further problems for the indigenous populace. The situation was repeated in Allied Force when the Air Force's A-10 fighter-bomber expended thousands of rounds of DU-tipped 30mm cannon shells. It is not clear how much damage these shells present to the Serbian/Kosovar populations.<sup>6</sup> Nonetheless, this is another area that airmen must examine to determine if there is a better way to perform the mission of killing enemy armored vehicles. If the price for killing enemy tanks is to poison the battlefield, than that price is too high.

Despite these two exceptions, it is clear that airmen have made great efforts to limit civilian casualties and collateral damage over the past decade. Yet, concerns are still raised regarding the humanity of air warfare. In one sense, the drive to limit the suffering of noncombatants and structures is highly commendable. In another sense, however, the calls for greater accuracy, greater discrimination, and greater restraint in air operations are puzzling when it is realized that traditional forms of war are far more deadly, especially to noncombatants, than is modern air war. Yet, there is little debate on how best to control these other forms of war.

Wars have always been harmful to noncombatants. Over the centuries, however, various attempts have been made to shield them from harm through the promulgation of various laws, treaties, conventions and protocols. On paper, these attempts look satisfying and noble; reality is another matter. Paradoxically, as legal activities to soften war's effects have accelerated, the numbers of civilian noncombatants killed have increased dramatically.

Well over 100 million people died in wars during the twentieth century – the bloodiest in history. One source claims that 110 million people died in just the first seven decades of the century: 62 million perished as a result of genocide or starvation caused by blockade and siege; 24 million were killed by small arms; 17 million by artillery and naval gunfire; and 2 million due to air attack.<sup>7</sup> These statistics, horrible as they are, do not include several million more deaths in Cambodia, Afghanistan, the Iran-Iraq War, Angola, Rwanda, Chechnya, and the Balkans. The vast majority of all those killed were noncombatants. These statistics indicate that the principle of noncombatant immunity is at best a goal we have striven unsuccessfully to achieve, but at worst is a myth that hides the truth. Innocent people have always suffered the most in war, especially in the traditional forms of land and sea warfare. On the Eastern Front in World War II, it is estimated that 10 million Soviet civilians were killed through starvation, artillery barrage, and gunfire; air attack was a negligible factor in piling up that horrendous death count. In fact, in all the wars of the twentieth century and all the tens of millions of noncombatants who have been killed, a tiny percentage, perhaps 2 percent, have died as a result of air attack.

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Sieges, artillery bombardments and ground campaigns have always been deadly. One of the more celebrated sieges of the past century was that of Leningrad during World War II. Over a period of nearly three years, German forces surrounded the city, attempted to starve it out, and pummeled it with artillery fire. In one of the more startling



incidents of the siege, the Soviet garrison commander attempted to allow the civilians trapped within the fortress city to escape. He called upon the German commander, Field Marshal Wilhelm von Leeb, to cease firing while the civilians departed. Von Leeb refused and ordered his troops to fire on the defenseless civilians if they tried to escape. Many did try to flee and were consequently slaughtered. At Nuremburg von Leeb was tried as a war criminal for this incident, but he claimed his actions were permissible under the laws of war. He was acquitted.<sup>8</sup> Over 1 million Russian civilians – allegedly protected by their noncombatant immunity – died during the siege of Leningrad.<sup>9</sup> The sieges of the past decade at Sarajevo and Grozny in Chechnya have shown once again the devastation and deadliness of such operations. Recent instances of ground operations that have resulted in hundreds of civilian deaths are the invasion of Panama and the failed effort in Somalia.

Another pervasive and indiscriminate killer is the landmine. In 1993 experts estimated that as many as 100 million unexploded landmines were scattered throughout 62 countries. The US State Department estimated that landmines killed or wounded more than 150 people per week worldwide. The American Red Cross thought that estimate was low, and that 200 people were killed each week and another 100 or so were wounded.<sup>10</sup> Both agreed that the majority of those killed and wounded were civilians.

Virtually all belligerents use landmines. In the Persian Gulf War, for example, the US and its allies laid approximately 1 million mines along the Iraq-Kuwait border.<sup>11</sup> Millions more have been sown in South Korea along the border with the North. Although the purpose of these mines is defensive, these ‘eternal sentinels’ are unable to establish friend from foe. Once a war is over, the mines often remain, posing a huge danger to the local populace. Worse, removing mines is not an easy task: besides the risk, it costs nearly \$1,000 to remove a mine that costs a fraction of that amount to plant.<sup>12</sup> Traditional war by sea has also been deadly to innocents.

Clausewitz was wrong. War does not, necessarily, have to be ‘an act of violence.’ For centuries the weapons of war have included the seemingly benign operations of naval blockades and sanctions. Their purpose is to induce suffering in a target



**KFOR troops clearing mines, where earlier a French light armoured vehicle had been destroyed.**

*Another pervasive and indiscriminate killer is the landmine. In 1993 experts estimated that as many as 100 million unexploded landmines were scattered throughout 62 countries*



country or region. Cutting off trade, food and raw materials is expected to correspondingly lower the standard of living among the populace, thus causing unrest. When unrest grows to a certain level, the populace will, hopefully, move against its government and leaders to force a change of policy that will convince those imposing the blockade or sanctions to lift them. As Vice President Al Gore stated it succinctly in the presidential debate of 3 October 2000: ‘the people of Serbia know that they can escape all these sanctions if this guy [Milosevic] is turned out of power.’ Unfortunately, this can be a slow, laborious and very deadly process. For example, according to the British official history, over 750,000 German civilians died as a direct result of the Allied starvation blockade of World War I. The Germans contend the figure was much higher, but in any event, it does not include those civilians who died in Austria-Hungary, Bulgaria and Turkey – German allies who were also under blockade.<sup>13</sup>

More recently, the Organization of American States (OAS) in 1991, and then the United Nations (UN) in 1993, imposed sanctions on Haiti in the aftermath of a military coup that drove President Jean-Bertrand Aristide from office. It was believed that the use of military force to restore Aristide was too extreme an option, because it would cause excessive bloodshed and suffering. The goals of the OAS and the UN in imposing sanctions instead were eminently noble: to induce the military junta to step down and restore democracy to Haiti. However, even supporters of the sanctions admit that the Junta and its inner circle ‘not only survived but prospered’ during the embargo. As a consequence, the price for this supposedly humane action was paid for by the Haitian population. Unemployment soared to 70 percent, the Gross Domestic Product plummeted, and the inflation rate climbed to 50 percent. A 1993 study conducted by the Harvard Center for Population and Development Studies found that the sanctions were killing 1,000 children per month.<sup>14</sup>



**USS George Washington assisting the enforcement of sanctions against Iraq, in the Arabian Gulf.**

*War does not, necessarily, have to be ‘an act of violence.’ For centuries the weapons of war have included the seemingly benign operations of naval blockades and sanctions. Their purpose is to induce suffering in a target country or region*



An even worse example of how seemingly non-violent weapons of war can be incredibly deadly is currently taking place in Iraq. Since the end of the Persian Gulf War several reports have detailed the severe suffering of the Iraqi populace as a result of the UN embargo. Although the Geneva Conventions specifically prohibit the use of food deprivation as a weapon, the UN nonetheless imposed just such restrictions. Agriculture seed to grow crops, farm machinery, and over 4 1/2 million tons of food ordered by Iraq were turned back by the naval fleet enforcing the embargo. Between 6 August 1990 and mid-March 1991 no food was allowed into Iraq. As a consequence, the Harvard Study Group that visited Iraq in 1991 estimated that as many as 50,000 children with leukemia, diabetes, asthma, heart disease and other ailments died.<sup>15</sup> The outrage in the world community over this situation was so great that the UN lifted the embargo on food and medicine and instituted the 'oil for food' program that allows Iraq to sell some of its oil and use the proceeds to buy food, medicine, and other necessities.<sup>16</sup> The results of this easing of the embargo have not been overly successful.

In March 1996 the World Health Organization published a report on conditions in Iraq. Comparing the levels of infant mortality rates in 1996 with those before the war, it found that infant mortality rates had doubled, and the rate for children under the age of five had increased six-fold.<sup>17</sup> It concluded that the shortage of food and medicine were directly attributable to '*financial constraints* as a result of the sanctions [which] have prevented the necessary import of food and medicine.'<sup>18</sup> These findings were confirmed three years later when UNICEF visited Iraq and noted that statistics showed there had been a steady and continual decline in mortality rates between 1960 and 1990 – despite the oppressive dictatorship of Saddam Hussein, the Iraqi people were getting healthier as the economy grew. The war and subsequent UN embargo changed everything. The under-five year old mortality rate jumped from 50 per thousand live births in 1980 to 117 per thousand by 1995. By 1999 it had climbed further to 125 deaths per thousand. UNICEF concluded that if the mortality rates of the 1980s had been continued through the 1990s, 'there would have been half a million fewer deaths of children under five in the country as a whole during the eight year period 1991 to 1998.'<sup>19</sup>

*Sanctions, embargoes and blockades are not a 'clean' option, and they do indeed cause very real levels of human suffering to the weakest members of a target society*

This is a staggering statistic. The UN has admitted that one-half million infants have died as a direct result of their own embargo on Iraq. When this statistic is compared to the total of 2,300 civilians that Iraq claims were killed during the six-week air campaign in 1991, the disconnect between perceptions of what constitutes humanity and discrimination in war becomes glaring. When we conduct military operations that cause such enormous death and suffering, we have lost the moral high ground.

A great deal of ink has been spilled on the subject of whether or not sanctions and embargoes have succeeded in their purpose of forcing a change in behavior of the target leadership. The results are contradictory.<sup>20</sup> In truth, however, the question

of whether or not sanctions and embargoes ‘work’ misses the point. A more relevant question would be: ‘do the ends justify the means?’ Sanctions, embargoes and blockades are not a ‘clean’ option, and they do indeed cause very real levels of human suffering to the weakest members of a target society. That suffering must be factored into the costs when evaluating different courses of action.

There is a wealth of empirical data over the past several centuries to show that blockades, embargoes, sanctions and sieges almost always have a percolating effect: they start killing at the bottom levels of society and slowly work their way upwards. The three-quarters of a million German civilians who died as a result of the starvation blockade in World War I were not the soldiers, politicians or factory workers – the productive members of the war society. Instead, the first to die were the old, the young, and the sick. Eventually, and only very slowly, did the effects begin reaching the upper levels of society. This has certainly been the case in Iraq and Haiti. It is not Saddam and his generals who are going to bed without their supper. It is essential that we remember this fact, because it refutes the argument that a blockade, embargo or sanction is imposed as a bloodless and humane way of coercing the leaders of a target country.

Many have argued that such suffering is actually the fault of the country’s leaders who refuse to give in to the demands of the imposer or who hoard food and medicine for themselves.<sup>21</sup> History demonstrates, however, that dictators who are the subject of an embargo generally react by attempting to win the war or conflict in which they are engaged. They will accept casualties to achieve their objectives, and when attacked they will attempt to protect those things most valuable to their society that allows them to continue the fight. They will sacrifice – reluctantly perhaps, but they will

nonetheless sacrifice – their weakest segments of society so that the strong can fight on. Nations at war for their survival (or the survival of their leader) don’t generally take a ‘women and children to the lifeboats first’ mentality. They cannot afford to do so. We must understand this. Thus, if we know from dozens of cases over several centuries what the result of our actions will probably be when we embargo Iraq or Serbia or Haiti, then we cannot say afterwards that we didn’t know the gun was loaded.

There is an alternative. During the past decade the world has seen air war conducted with humanity, precision and low risk – to both sides. It has been instrumental in achieving the political objectives of our leaders. Military force is not a pleasant option or one that should be employed lightly, but if it is necessary, we should do more than simply follow the letter of the law, we should limit as much as possible the harm to civilian noncombatants. Aerospace power should therefore be our weapon of first resort, because it is the most discriminate, prudent and risk-free weapon in our arsenal.

*It is not Saddam and his generals who are going to bed without their supper. It is essential that we remember this fact, because it refutes the argument that a blockade, embargo or sanction is imposed as a bloodless and humane way of coercing the leaders of a target country*



- 1 Over 700 surface-to-air missiles were launched at NATO aircraft, as well as tens of thousands of anti-aircraft artillery shells. Two NATO aircraft were shot down, but the pilots were recovered.
- 2 Human Rights Watch, 'Civilian Deaths in the NATO Air Campaign,' Feb 7, 2000, 5. HRW investigators actually visited only 42 of the 90 sites of the alleged civilian casualties.
- 3 Ibid., 12-13.
- 4 During Operation Northern Watch over Iraq, US aircraft sometimes dropped bombs with concrete warheads to further limit the amount of damage caused in sensitive areas.
- 5 International Committee of the Red Cross, '2001 Review Conference of the United Nations Convention on Certain Conventional Weapons,' 14 Dec 2000, pp 1-2.
- 6 Bill Mesler, 'Pentagon Poison: The Great Radioactive Ammo Cover-Up,' *The Nation*, 5 May 1997; Scott Peterson, 'Aftershocks from Anti-Tank Shells,' *Christian Science Monitor*, 9 Jan 2001, p 1.
- 7 Gil Elliot, *Twentieth Century Book of the Dead* (NY: Scribner's, 1972), 125, 132-36, 232-34. In another such estimate, William Eckhardt, *Civilizations, Empires and War: A Quantitative History of War* (Jefferson, NC: McFarland, 1992), 273, states that between 1900 and 1989 there were approximately 111 million deaths due to war; he does not break down cause of death as does Elliot. *The Black Book of Communism: Crimes, Terror, Repression*, by Stéphane Courtois et.al. (Cambridge: Harvard University Press, 2000) states that fully 95 million people died at the hands of communist regimes in China, the Soviet Union, Vietnam, North Korea, etc. during the past century. This incredible statistic excludes those killed in those countries during inter-state wars.
- 8 Michael Walzer, *Just and Unjust Wars* (NY: Basic Books, 1977), 166-67. The actual judgment of the court can be found in Volume XI of *Trials of War Criminals before the Nuremberg Military Tribunals* (Washington: Government Printing Office, 1950), 563. Of note, the current US Army field manual on the law of war confirms the legality of this practice: 'Thus, if a commander of a besieged place expels the noncombatants in order to lessen the logistical burden he has to bear, it is lawful, though an extreme measure, to drive them back, so as to hasten the surrender.' US Army, FM 27-10, The Law of Land Warfare, Jul 1956 (Change 1, Jul 1976), 20.
- 9 Harrison Salisbury, *The 900 Days: The Siege of Leningrad* (NY: Harper & Row, 1969), 514-16.
- 10 Human Rights Watch, *Landmines: A Deadly Legacy* (NY: Human Rights Watch, 1993), 3-4.
- 11 UNICEF, *The State of the World's Children* (NY: Oxford University Press, 1996), 26.
- 12 Since the Mine Ban Treaty was signed in 1997, things have improved, but thousands of casualties still occur worldwide each year. Human Rights Watch, *Landmine Monitor Report* (NY: HRW, Sep 2000). Of note, the three largest producers of landmines – Russia, China and the US – have not ratified the treaty.
- 13 A.C. Bell, *A History of the Blockade of Germany, 1914-1918* (London: His Majesty's Stationery Office, 1937), 672. The eminent British naval historian, Admiral Sir Herbert Richmond, was unequivocally blunt regarding the purpose of the blockade: 'what we have to do is to starve & cripple Germany, to destroy Germany. That is our prime object.' Arthur J. Marder (ed.) *Portrait of an Admiral: The Life and Papers of Sir Herbert Richmond* (Cambridge: Harvard University Press, 1952), 219-20.
- 14 David Weekman, 'Sanctions: The Invisible Hand of Statecraft,' *Strategic Review*, 26 (Winter 1998): 40.
- 15 Eric Hoskins, 'Pity the Children of Iraq,' *Middle East International*, 24 Jan 1992, pp 16-17. Dr Hoskins was the medical coordinator of the Harvard Study Group that visited Iraq in 1991. See also Alberto Ascherio, 'Effect of the Gulf War on Infant and Child Mortality in Iraq,' *New England Journal of Medicine*, 327 (24 Sep 1992): 931-36.
- 16 Even with the easing of the sanctions there were some bizarre aspects: syringes were initially prohibited, as were plastic bags for transfusions, chlorine for water treatment and even chemical fertilizer, because they could be used for military purposes. John Mueller and Karl Mueller, 'Sanctions of Mass Destruction,' *Foreign Affairs*, 78 (May/Jun 1999): 43-50.
- 17 World Health Organization, 'The Health Conditions of the Population in Iraq since the Gulf Crisis,' Mar 1996, p 6.
- 18 Ibid., p 16. Emphasis in original.
- 19 UNICEF, 'Child Mortality: Iraq, the Current Situation,' Aug 27, 1999, [www.unicef.org/reseval/cmrireq.html](http://www.unicef.org/reseval/cmrireq.html).
- 20 For a good overview of when and how sanctions do or do not work, which includes a review of the literature on the subject, see T. Clifton Morgan and Valerie L. Schwebach, 'Fools Suffer Gladly: The Use of Economic Sanctions in International Crises,' *International Studies Quarterly*, 41 (March 1997): 27-50. This article notes that in some cases, sanctions are imposed for purely domestic political reasons: the need to show a restive populace that *something* is being done.
- 21 Claudette Antoine Werleigh, 'Haiti and the Halfhearted,' *Bulletin of the Atomic Scientists*, Nov 1993, pp 20-23; Jesse Helms, 'What Sanctions Epidemic?' *Foreign Affairs*, 78 (Jan/Feb 1999): 2-8.



**Globemaster III, C-17 in Royal Air Force colours. Operated extensively by the USAF the aircraft can transport a variety of heavy lift equipment including the Main Battle Tank.**





**Is there a role for  
Air Power in the  
Post-Cold War World?**



Air power has a significant role to play in the post-Cold War era. Since the end of the Cold War there has been a transformation of the international security environment resulting in an increase in limited-intensity regional conflicts. Furthermore, politicians, increasingly constrained by media-fuelled public opinion, and moral and financial considerations, attempt to demonstrate resolve and commitment to operations while minimising the risk of casualties on either side. The ability of air power to utilise its inherent strengths of height, speed and reach offers politicians a highly visible presence, relative invulnerability, and increased accuracy through the use of Precision Guided Munitions (PGMs). Consequently, air power has played an increasing role in limited-intensity conflicts, culminating in the sole use of air power by the North Atlantic Treaty Organisation (NATO) during Operation ALLIED FORCE.<sup>1</sup> Nevertheless, the efficacy of air power to undertake strategic bombing within combat operations and Peace Support Operations (PSOs) has been questioned. Analysis of Operations DESERT STORM<sup>2</sup> and ALLIED FORCE has shown that while air power is very effective in destroying static targets, it is less destructive against mobile targets. Additionally, while air power has successfully undertaken roles within PSOs, land forces are still required to carry out the full range of tasks in these operations.

Air power is a concept that has historically proven difficult to define. Winston Churchill emphasised this point, arguing that, 'air power is the most difficult of military forces to measure or even express in precise terms.'<sup>3</sup> Consequently, initial attempts to define air power were vague. Marshal of the Royal Air Force Sir John Slessor remarked in the 1950s that 'air power is a compound of Air Forces and all those things on which Air Forces directly or indirectly depend, such as a flourishing aircraft



industry and civilian aviation, a good meteorological service, secure fuel supplies and so on.’<sup>4</sup> While the Royal Air Force concept of air power has broadened over time in line with technological developments to include air vehicles from all sectors of the armed forces, including unmanned air vehicles (UAVs) and spaced based systems, it has become more focused in terms of peripheral elements. National civilian and commercial resources, for example, are still included, but only those that are used as part of a military operation, whereas the aviation industry has been excluded. Furthermore, the current concept of air power encompasses a wide variety of tasks from high profile combat missions to Combat Support Operations such as Intelligence Surveillance and Reconnaissance (ISR), air transport, search and rescue, and electronic warfare.

*‘Air power is the ability to project military force in air or in space by or from a platform or missile operating above the surface of the earth. Air platforms are defined as any aircraft, helicopter or unmanned air vehicle.’<sup>5</sup>*

This broadly acceptable definition will provide the basis for this paper.

The role of air power in the post-Cold War world is determined by its inherent strengths and weaknesses, leading it to make an extremely useful contribution in particular political circumstances. British air power doctrine manual, AP3000, regards height, speed and reach to be air power’s three main strengths.<sup>6</sup> Height confers to air assets not only an ‘enhanced observation and perspective of the battlespace’,<sup>7</sup> but also considerable manoeuvrability. Speed allows rapid deployment and also bestows enhanced survivability by reducing exposure to enemy forces. Reach, assisted by air-to-air refuelling, allows force projection to all parts of the earth, unconstrained by topographical obstacles.

From these strengths five characteristics are derived, that enable air power to make a major contribution to modern peace support and combat operations: pace and tempo, flexibility and versatility, penetration, perspective, poise and stand-off and ubiquity of space.<sup>8</sup> Pace and tempo are comprised of three elements: speed of decision, speed of execution, and speed of transition, facilitating the re-deployment of air power at short notice. Flexibility and versatility allow air vehicles to strike various specialist target sets during a single mission. Penetration allows air power to strike targets within the enemy homeland without first defeating its fielded military forces. Perspective is derived from capitalising upon height and reach, permitting a broad view of the battlespace from the air, essential for intelligence gathering. Poise and stand-off allow air vehicles to loiter in close

*While the Royal Air Force concept of air power has broadened over time in line with technological developments to include air vehicles from all sectors of the armed forces, including unmanned air vehicles and spaced based systems...*





*Air power is unable to exert continual force upon enemy troops denying them control of their own actions without friendly troops physically to occupy territory*

highlighted the ability of land forces to hide in woods, civilian buildings and bunkers during air attacks, then re-emerge to continue their operations. Air power is unable to exert continual force upon enemy troops denying them control of their own actions without friendly troops physically to occupy territory. In essence, air power's inability to occupy territory means it cannot control territory permanently. Air vehicles are constrained by the number of weapons stations they possess and by aerodynamic considerations. The effect of this limitation, however, has diminished with the increased accuracy offered by PGMs, as fewer munitions are required. Modern air vehicles are also fragile pieces of equipment that are vulnerable to sophisticated air defence systems, particularly surface to air missiles. Nevertheless, the vulnerability of air vehicles can be reduced by utilising speed alongside self-protection devices.

These unique characteristics made it possible for air power to take advantage of the changes in the global political climate, thus assuming a larger role in the post-Cold War world. The end of the Cold War transformed the international security environment with important implications for the possibility and nature of external military involvement. The Cold War provided the stark simplicity of confrontation between the superpowers and their allies. Without the external constraints imposed by their superpower relationships, ethnic disputes previously contained have come to the fore, prompting a marked increase in limited-intensity regional conflicts. High and medium-intensity military interventions by western democracies are often both unnecessary by traditional standards and unpopular. On occasion, however, such intervention may be deemed to be beneficial to national interests; for example, securing cheap Middle Eastern oil supplies was a major motivation for many who participated in the Persian Gulf War.<sup>10</sup> Unless national interests are at stake, however, national governments are unlikely to be deeply committed to military interventions that are usually prompted by either moral outrage or a fear of instability spreading throughout a region. Similarly, media interpretation and influence, together with moral and financial considerations, has reduced the willingness of the electorate to support military intervention. Without a threat to national security or prestige, electorates are perceived to be less happy about servicemen dying – or killing. Public opinion fuelled by media images, for

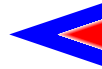
proximity to a potential area of operations, while the ubiquity of space coupled with modern technology enables space based assets to be pervasive.

AP 3000 also identifies three main limitations of air power: impermanence, limited payload and fragility.<sup>9</sup> Impermanence is derived from the inability of air vehicle to stay airborne indefinitely. The Balkan conflicts of the 1990s

*Without a threat to national security or prestige, electorates are perceived to be less happy about servicemen dying – or killing*







example, not only influenced the decision of President Bush to launch Operation RESTORE HOPE <sup>11</sup> in Somalia in 1992, but also forced President Clinton to withdraw all military forces in 1993, after the execution of US servicemen in Mogadishu which caused domestic public outcry. The US is now reluctant to commit ground troops to any military intervention, in an attempt to avoid such a repetition. This unwillingness to commit ground forces was highlighted during the Kosovo conflict in 1999, when President Clinton ruled out utilising ground forces, in order to retain public support for intervention. Additionally, western democracies since the end of the Cold War wish to realise the 'peace dividend'; consequently military spending – either for equipment or for expensive deployments abroad – has fallen further down the list of national priorities. Should a government wish to contemplate military intervention, it thus has the task of convincing a sceptical electorate, without the aid of Cold War rhetoric for justification.

Intervention in the limited-intensity conflicts mentioned above has generally been multinational. Such operations are preferable to unilateral intervention as they offer burden-sharing in terms of finances, equipment, and lives, thus making it is easier for politicians to enlist the support of their electorates. Nevertheless, within these operations agreement must be reached between a number of contributors, each of which requires their own domestic support. Organisations such as NATO require operations to be sanctioned by all member states before they can go ahead, forcing a compromise to accommodate those states that are more reticent towards military action. Also, once an intervention is undertaken it is necessary to get results before the coalition crumbles. The need for consensus therefore forces organisations to take fewer risks, and seek to achieve objectives quicker than would be the case if a nation were acting alone. Consequently, military intervention must now be as cheap as possible, and almost completely bloodless, as well as quick and decisive in order to gain results before support wanes.

Within the bounds of such limitations air power is very attractive to politicians, as it offers a highly visible presence, relative invulnerability when compared with ground forces, the ability to escalate and reduce the scale of military action quickly and easily, while indicating commitment to the operation. Moreover, the development of PGMs has resulted in air power offering increased accuracy and 'effects-based' targeting, thereby reducing the number of enemy casualties and the level of destruction required to achieve the campaign objective. Firstly, the rapid arrival of air assets in the area of operations provides a highly visible symbol of presence and resolve to antagonists and onlookers abroad and at home. Within 24 hours of the Iraqi invasion of Kuwait in 1991, Coalition air power was patrolling the Iraqi border with Saudi Arabia, hindering any further southward expansion by Iraq and reassuring neighbouring Arab states. This rapid deployment reported by the media emphasised Coalition commitment to the electorate at home, the Iraqi leadership and Saudi Arabia.

Secondly, air power is less vulnerable to enemy fire when compared with ground forces, and thus is attractive to politicians who wish to keep friendly casualties to a minimum. During situations where there may be a limited political commitment to an operation, aircraft can operate from secure bases beyond the reach of the opponents' military forces. Air power further reduces the number of friendly casualties by reducing the amount of manpower required for military interventions. While Britain offered to

commit 54,000 troops to the proposed Kosovo ground force operation,<sup>12</sup> this figure is over ten times the number of British aircrew that participated in Operation ALLIED FORCE.<sup>13</sup> Additionally, combat aircraft can operate successfully, although with less weapons accuracy, beyond the range of the majority of surface-to-air missile systems and anti-aircraft artillery, reducing their vulnerability even further. During Operation ALLIED FORCE 10,484 strike missions were flown with the loss of only two aircraft and no lives,<sup>14</sup> an unprecedented achievement from a military standpoint which meant that it was easier for the governments involved to retain public support for the intervention.

The third attribute that makes air power politically attractive is its ability to utilise PGMs. Since the end of the Cold War, PGMs have become more prominent because of the increased accuracy they offer. PGMs confer to air power the ability to identify and destroy very small targets with only a small risk of catastrophic deviance from the designated point of impact:

*'In 1945, 3,024 aircraft with an average delivery error of 3,300 feet were required to hit a 60 x 100 feet target; by the Vietnam War the number had reduced to 44 aircraft, and by the Gulf War only eight aircraft were required.'*<sup>15</sup>

The Gulf War prompted claims that PGMs provided air power with a 'surgical strike' capability with only one bomb needed to destroy a target. Although this claim proved ultimately to be false, by the end of Operation DELIBERATE FORCE,<sup>16</sup> less than two PGMs were required to destroy each designated point of impact.<sup>17</sup> This improved accuracy decreases the chances of PGMs hitting the wrong target and causing collateral damage.<sup>18</sup>

As Western democracies are highly sensitive to media images of collateral damage, these images have the potential to weaken electorate support for an operation, even to the point of causing its premature cessation. Additionally, an opponent will undoubtedly highlight instances of collateral damage, in an attempt to discredit the interventionist's operations with observers and other coalition members. During the Gulf War, for example, Iraqi leader Saddam Hussein permitted the world's media unrestricted access only to bomb sites involving collateral damage. By decreasing collateral damage, PGMs assist in maintaining public support for an operation, without which national governments would find it extremely difficult to sustain such actions.

Moreover, the unprecedented accuracy that these weapons offer enables air vehicles to carry out 'effects-based' targeting, through which it is possible to pre-determine the level of



*During the Gulf War, for example, Iraqi leader Saddam Hussein permitted the world's media unrestricted access only to bomb sites involving collateral damage*



destruction that is caused. Politicians thus seek to deny the enemy use of their facilities without having to destroy them completely. The ability to engage in 'effects-based' targeting, therefore, is an important attribute in view of the cost of rebuilding a nation's infrastructure and facilities after the end of a conflict. It is possible, for example, to disable a power station by destroying only its water pumping station, an effective but inexpensive procedure in terms of risk to aircrew and post-conflict reparation.

The last major advantage that PGMs confer to air vehicles, is the ability to attack several targets concurrently, something not possible with 'dumb' bombs.<sup>19</sup> Thus, it has been argued that PGMs enable air power to concentrate force at many desired points simultaneously,<sup>20</sup> allowing more targets to be destroyed in a shorter period of time than was previously possible. During the first night of Operation ALLIED FORCE, 44 key targets were destroyed within Belgrade, a level of destruction that could not have been achieved without the use of PGMS.<sup>21</sup> Consequently, PGMs allow operations to be completed relatively quickly, with the length of conflicts now calculated in days rather than months and years. The future development of PGMs will lead to air power playing an increased role within limited-intensity conflicts. Relatively inexpensive guidance systems will confer a day and

*...air power is inherently flexible, allowing action to be suspended and activated, and also escalated and decreased...*



night, all weather precision capability to a large amount of 'dumb bombs', thereby enhancing the capabilities of current weapons in a cost-effective manner.<sup>22</sup> Also, the procurement of long-range air launched cruise missiles, such as Stormshadow, will decrease aircraft and crew vulnerability further by increasing the stand-off potential of air power.

Finally, air power is inherently flexible, allowing action to be suspended and activated, and also escalated and decreased in accordance with the diplomatic process. During Operation DELIBERATE FORCE, NATO bombing of the Bosnian Serbs was paused to allow them to remove their heavy weaponry from the Sarajevo demilitarised zone. After the Bosnian Serbs failed to comply with NATO instructions bombing was re-convened. Moreover, air assets can be extracted from their foreign operating bases without the problems associated with extracting surface forces. All of the above attributes increasingly make air power the

instrument of choice for politicians as it best fits the political requirements for military intervention.

While air power has played an increasing role in the post-Cold War world, there are a number of limitations that need to be considered: the accuracy of PGMs is dependent upon good intelligence, air power has difficulty targeting non-state actors, and it encounters significant difficulties when employed against strategic targets that are not static. Despite the highly accurate bombing demonstrated by PGMs, the world media remembers the bombs that go astray. The destruction of the Al Firdos command bunker in the Gulf War that resulted in the death of 314 sheltering civilian Iraqi's,<sup>23</sup> illustrated PGMs' dependence upon good intelligence. Similarly, it can be argued that the way in which the accuracy of these weapons is presented leads to false expectations. The Circular Error Probability (CEP) of PGMs is generally quoted in tens of feet, however, CEP only shows where the nearest 50 per cent of the weapons will fall. PGMs perform poorly when their guidance systems fail, a problem which can result in the weapon missing the target by miles. In 1998, a US Tomahawk cruise missile went so far astray as to land in Pakistan instead of Afghanistan. While PGMs have undoubtedly improved the capability of air power within military operations, there remain serious limitations that must be taken into account,<sup>24</sup> and it would be unwise to exaggerate capabilities.

Increasingly, limited intensity combat operations are directed against non-state actors, such as communal militias, violent political movements, and other organised political actors that are not nation states. Recent examples include Somalia in 1992 and 1993, Bosnia in 1995, and the destruction of targets connected to Osama bin Laden's terrorist organisation in 1998. It is clear that there are inherent difficulties in using air power against non-state actors: such adversaries may lack identifiable and targetable assets, inaccurate intelligence estimates are common and non-state adversaries may lack control over constituent elements.<sup>25</sup> The US missile attacks against Osama bin Laden were ineffectual as he lacked assets that were vulnerable to military force. Further, inaccurate intelligence led to US Cruise missiles destroying what was believed to be a chemical warfare production facility in the Sudan, linked to bin Laden. The facility was in fact a pharmaceutical factory, a mistake that caused severe embarrassment to the US. Although air power has succeeded in some instances, it needs to overcome the problems of a lack of targets and dislocated authority which provide circumstances in which air power struggles to be effective. It is not clear, however, that these difficulties could be better overcome by the use of an alternative military method, such as ground forces.

Air power has been utilised for strategic effect with varying degrees of success in the post-Cold War era. Strategic bombing is directed towards the opponent's centres of gravity, such as infrastructure, key production facilities and fielded military forces, where 'the effect sought by air power could be destructive, non-destructive or a combination of both, against target sets which undermine the opponent's ability, will and means to continue his aggression.'<sup>26</sup> Analysis of two case studies, Operation DESERT STORM and Operation ALLIED FORCE, highlights the effectiveness of air power in destroying static strategic targets.

During Operation Desert Storm air power was successful in destroying many strategic target sets including command and control organs, power generation facilities, refined lubricant production plants, transportation infrastructure and dug-in troops.



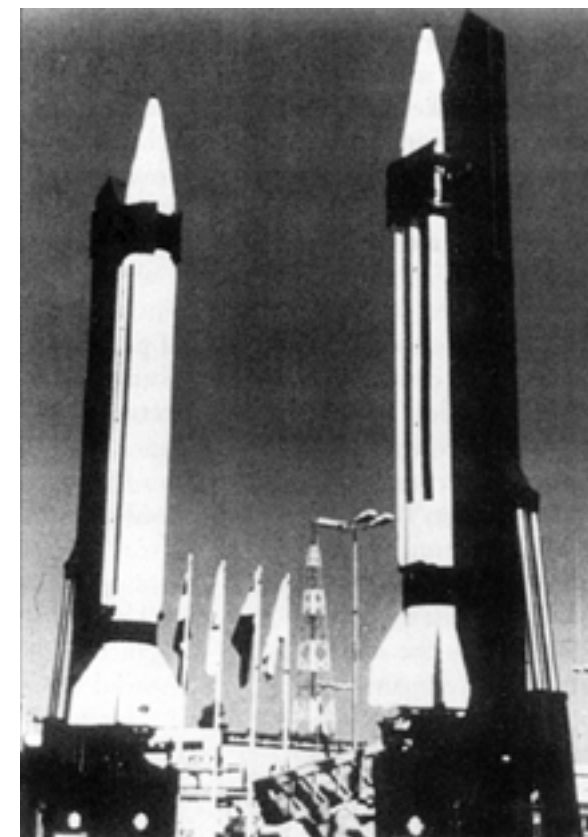
The Baghdad electrical power grid was disabled after aircraft destroyed 27 generation plants and transmission facilities throughout the country.<sup>27</sup> Similarly, 28 Iraqi oil facilities were devastated, effectively shutting down refined petroleum production, and after ten days of attacks Iraqi refined oil production was also shut down,<sup>28</sup> while the destruction of 44 command and control facilities left the Iraqi leadership separated from their forces and unable to communicate effectively.<sup>29</sup> The vast Iraqi force assembled in Kuwait, numbering 500,000, depended upon constant supplies of food, water, fuel and ammunition from Iraq. Coalition aircraft destroyed 44 key rail and road bridges in Iraq,<sup>30</sup> effectively halting resupply, while the troops themselves, their equipment and supply dumps in Kuwait, were continually targeted. Supply levels were cut by 90 per cent, and 48 per cent of tanks, 30 per cent of armoured troop carriers, and 60 per cent of artillery<sup>31</sup> were destroyed, seriously degrading Iraq's ability to fight Coalition ground forces. Consequently, it has been argued that strategic air power was the decisive factor in the Coalition's victory in the Gulf War:

*'Gulf Lesson One is the value of air power.'*<sup>32</sup>

It can be argued, however, that the Gulf War was ideally suited to air attack, and surrounded by unique conditions. The Iraqi army fought a conventional war, utilising large formations that were immobile, dug in, and occupying sparsely populated desert terrain far away from civilians. These conditions meant that the Iraqi forces were easier to target and air vehicles could use large amounts of unguided munitions without fear of causing collateral damage. Coalition air power was thus able to inflict an unprecedented level of destruction on fixed targets and Iraqi fielded forces in a relatively short space of time.

Air power was less successful during Operation DESERT STORM in combating mobile targets, especially Scud missile launchers. Iraqi Scud missiles posed a considerable threat to Coalition cohesion during the Gulf War by threatening to provoke Israel's entry into the conflict. The destruction of Scud missile launchers was therefore a top priority for campaign planners. Nevertheless, despite 2,493 sorties dedicated to the 'Scud hunt', the Iraqi launchers were never fully suppressed – 88 were fired against Israel, Saudi Arabia and Bahrain.<sup>33</sup> While aircraft managed to destroy most of the fixed Scud launch sites,<sup>34</sup> the majority of the mobile launchers that Coalition aircrews believed that they had destroyed were later found to be decoys.<sup>35</sup>

Although directed against very different enemy forces, NATO air power was as effective against static targets during Operation ALLIED FORCE as in the Gulf, attacking 440 static targets, with over 75 per cent suffering moderate to severe damage.<sup>36</sup> Moreover, NATO destroyed or significantly damaged a



*Iraqi Scud missiles posed a considerable threat to Coalition cohesion during the Gulf War by threatening to provoke Israel's entry into the conflict*

wide array of targets including: 14 command posts, 34 road bridges, 11 railway bridges, 29 per cent of all Serbian ammunition storage capacity, 57 per cent of petroleum reserve capacity and all Serbian controlled oil refineries.<sup>37</sup> Consequently, Operation ALLIED FORCE served to reinforce the efficacy of air power against fixed targets.

Kosovo did, however, provide NATO air power with a more challenging scenario in which to demonstrate its effectiveness against ground forces. NATO dedicated over 30 per cent of its sorties to the destruction of Serb forces, which was regarded as NATO's 'No. 1 priority'.<sup>38</sup> Yet, these forces proved to be very adept at 'going to ground', and concealing their heavy equipment in woods and urban areas, thereby posing a high risk of collateral damage for NATO. Decoys were also used extensively throughout Kosovo, while Serbian troop formations were small in number, widely dispersed and constantly on the move. Consequently, NATO aircrews were hampered by insufficient intelligence regarding the location of Serb forces, which was necessary for the effective use of PGMs. Moreover, Serb forces were not heavily dependent on re-supply from their homeland as food and water could be obtained locally, and they had their own ammunition stores within Kosovo. Overall, therefore, NATO aircraft encountered great difficulty in destroying Serbian fielded forces.

*...air power was unable to stop Serb troops and militia burning the homes of Kosovar Albanians and forcing 850,000 of them to flee...*



In the aftermath of the conflict NATO claimed to have destroyed 93 tanks, 153 armoured personnel carriers, 339 military vehicles and 389 mortars and artillery pieces.<sup>39</sup> The British Ministry of Defence claimed that NATO air power effectively reduced the Serb's capacity to carry out ethnic cleansing by forcing their heavy equipment into hiding. Sir John Goulden remarked that 'the bottom line is that we bottled up the equipment that was in Kosovo.'<sup>40</sup> It can be argued, however, that Serb forces only required heavy equipment in order to fight a NATO ground force, as lightly armed Serb infantry were more than a match for Kosovo Liberation Army troops lacking training and combat experience. Furthermore, air power was unable to stop Serb troops and militia burning the homes of Kosovar Albanians and forcing 850,000 of them to flee abroad.<sup>41</sup> Judah has argued that the efficacy of air power against tanks and artillery is academic when, 'the most potent weapon in ethnic cleansing is the cigarette-lighter needed to set houses on fire'.<sup>42</sup> Equally seriously, NATO aircraft were constrained by topography that provided the enemy with the ability to conceal their troops, and by adverse weather – both optical and laser guided PGMs were unable to track targets obscured by large amounts of cloud. The House of Commons Select Committee on Defence's report stated that '[NATO air power] did not stop Serbian forces from forcing civilians from their homes and manipulating the refugee flow'.<sup>43</sup> Consequently, air power can be seen as



ineffective against widely dispersed small groups of lightly armed troops that are concealed by wooded areas and mountains, or intermingled with civilians.

Thus, the evidence of air power in Kosovo confirms the picture presented by the Gulf War – that air power is highly effective against static strategic targets, but is far less impressive when faced with mobile targets such as Scud missile launchers or light infantry.

Perhaps the most striking feature of the post-Cold War security environment, however, is not the more conventional conflict scenarios discussed above, but the Peace Support Operations (PSOs), defined as, ‘multi-functional operations involving military forces and diplomatic and humanitarian agencies ... that ... are designed to achieve humanitarian goals or long term political settlement.’<sup>44</sup> This concept of operations includes peacekeeping, peace enforcement, conflict prevention, peace making, peace building and humanitarian missions. While the UN initiated just 13 PSOs between 1948 and 1988, during the last decade this has risen significantly, with the UN activating 36 such operations, including those undertaken in Somalia, Haiti and Bosnia.<sup>45</sup>

Air power also has a role to play within PSOs. Utilising its strengths air power has the ability to carry out certain tasks more effectively than land and naval power within these types of operation, such as ISR, the rapid transportation of men and supplies, and enforcing no fly zones. Nevertheless, this does not mean that air power is able to carry out PSOs in isolation, as ground personnel are required for many roles, such as providing human intelligence (HUMINT) and building interpersonal relationships with the host nation.

Colonel Owen of the United States Air Force has proposed four tactical roles within PSOs that air power assets are able to undertake: observation, interposition, patrolling, and civic actions.<sup>46</sup> In the first area, observation, air power offers significant capabilities, including the ability to cover a wide area continually, provide a high standard of definition on specific targets, and a day and night all weather capability. Air vehicles can be used to observe the implementation or violation of a truce process, including cease fires, border violations and the positioning of troops, as well as the location and size of threats to the Peace Support force. Air power, through the use of ISR assets such as the U2/TR1A high altitude manned reconnaissance aircraft, the



*Air power, through the use of ISR assets such as the U2/TR1A high altitude manned reconnaissance aircraft, the Phoenix UAV, and Helios satellite constellation, is able to cover a wide area, with a good view from a variety of altitudes*

Phoenix UAV, and Helios satellite constellation, is able to cover a wide area, with a good view from a variety of altitudes. ISR assets provide not only a high standard of definition coupled with a day and night capability, but also radar equipped platforms such as the E-8 Joint Surveillance and Target Attack Radar System which are largely unaffected by the weather. Finally, modern UAVs allow specific targets or areas of territory to be observed for long periods of time. Long endurance UAVs, such as the United States' Predator platform, which was successfully deployed over Bosnia, combine a range of 500-700 kilometres with an endurance time of 48 hours.<sup>47</sup> ISR assets have been used to good effect, exposing the existence of mass graves in Bosnia and highlighting the movement of large numbers of refugees towards the Macedonian border in Kosovo.

While air power undoubtedly increases the ISR capability of a military force, there remain limitations to what it is capable of observing. It can not reveal the content of buildings or vehicles, detect small arms from a distance, or discriminate between military and civilian trucks in a convoy. In Kosovo, NATO mistook a refugee convoy for military vehicles and killed fifty civilians.<sup>48</sup> Ground troops are required to search buildings and vehicles and provide detailed local HUMINT, enhanced by familiarity and experience with the local environment. In contrast with air assets, troops are able to promote good relations with the local population, thereby helping to deter violations of peace agreements. Further, high technology ISR assets are extremely expensive, especially as a multiplicity of sensors are required to provide total coverage and clarity, and are therefore not available to all armed forces.

The second role that air power undertakes within PSOs is interposition, where military forces are used to create and maintain buffer zones between belligerents, and to prevent border violations and military confrontation. Air assets possess the ability to move troops and equipment rapidly over large distances, unconstrained by the barriers of physical topography, such as mountains and lakes. In contrast land forces have great difficulty transporting troops and equipment quickly to isolated locations without good quality roads. Further, the speed and reach of aircraft means that they can respond quickly to sudden changes in the situation on the ground, facilitating the rapid interposition of forces to complete the tasks highlighted above.

Thirdly, air vehicles can be used to patrol the area of operations to increase the visibility, credibility and effectiveness of the Peace Support force. Patrolling aircraft provide a means by which the Peace Support force can establish control over the belligerents through the enforcement of no-fly zones and air embargoes. Moreover, the speed and responsiveness of air vehicles means that they can provide valuable support and protection to land based patrols dispersed over a wide area. Such air patrols are relatively invulnerable, while land patrols are vulnerable to attack by snipers and superior force levels.

Fourthly, air power is capable of carrying out civic actions that can promote stability and confidence between the Peace Support force and the host nation. Civic actions can include a multitude of tasks such as providing assistance to law enforcement agencies, protecting economic assets, the provision of specialist advice, the distribution of food and medicine, and the evacuation of people from disaster areas. For example, British helicopters and transport aircraft were used both to rescue civilians from floods in Mozambique, and to deliver vital supplies to Sarajevo during the Bosnian conflict. Air assets possess the





*If troops and supplies are needed urgently, then air vehicles are the only means of achieving this aim*

abroad. Governments have found themselves constrained by the reluctance of the electorate to support action unless national interests are at stake, and have therefore emphasised the humanitarian nature of operations in order to gain public approval. Additionally, media images play an important role in retaining public support throughout a military operation. Images such as the public execution of US troops in Somalia or the bombing of a civilian convoy in Kosovo can lead to public disapproval and the ending of military action. Politicians, therefore, when confronted by low-intensity regional conflicts are required to deliver short but decisive operations that are ideally bloodless for both sides.

Within this political environment the positive attributes of air power have led to it becoming the military instrument of choice for politicians. Air power offers fewer friendly and enemy casualties, as well as less collateral damage than ground operations. The increased accuracy offered by PGMs has led to the development of 'effects-based' targeting, improving the efficacy of air

ability to reach isolated areas quickly, particularly important in siege or disaster relief operations. In comparison with surface transportation, however, aircraft payloads are usually smaller. Moreover, ground forces are able to develop important interpersonal relationships, building trust with the local population and leaders through face-to-face contact.

Air power is a vital component of most PSOs, providing a highly visible presence through patrols or the transportation of troops, equipment and supplies in a short period of time. Once a government decides to initiate a PSO it is important that action is taken quickly in order to demonstrate commitment and resolve to the electorate, coalition partners and those parties that the politicians are attempting to support or to deter. If troops and supplies are needed urgently, then air vehicles are the only means of achieving this aim. The utility of air power has been demonstrated by their use in every major PSO since the end of the Cold War, including Bosnia, Kosovo, Somalia and Sierra Leone.

Since the end of the Cold War the international security environment has changed considerably as a result of the decline in east-west antagonism. Without ideological rhetoric, politicians have found it increasingly difficult to justify military operations



power in combat operations. The utilisation of air power can, therefore, lead to fewer images of death and destruction in the media, and thereby help to engender continued public support for military operations. Furthermore, PGMs offer the ability to destroy a large number of targets simultaneously, resulting in shorter operations. In short, without the use of air power politicians would have been more reluctant to embark on limited-intensity military operations. Moreover, as future development further enhances accuracy and range for PGMs, the role of air power within military operations will continue to increase. Operations DESERT STORM and ALLIED FORCE highlighted the efficacy of air power against all types of static targets. It is the only type of military force that is capable of penetrating deep into the enemy homeland without first defeating their fielded forces, and it has been and will continue to be successful in combating fielded forces that are reliant on heavy equipment or on extensive re-supply.

Air power is, however, limited in some important respects; for example, the accuracy of PGMs is reliant upon good intelligence and the performance of sophisticated guidance systems. Furthermore, non-state actors that lack identifiable targets have demonstrated a degree of immunity to air attack, and the efficacy of air power against mobile targets is uncertain, especially when the enemy is adept at utilising topography and local communities to conceal forces and equipment. Importantly, the ability to deny the enemy the use of his heavy equipment is academic in situations where only light infantry is required to achieve the objective. Despite these limitations, however, as long as the international security environment is characterised by regional conflict, low-intensity fighting or humanitarian crises, air power will be central to any military option available to political leaders.

## NOTES

- 1 ALLIED FORCE was the NATO designate for the air campaign conducted during the Kosovo conflict in 1999.
- 2 Operation Desert Storm was the US designate for the military operations carried out by Coalition forces during the 1991 Persian Gulf War.
- 3 Richard Hallion, *Storm Over Iraq: Air power and the Gulf War*, Smithsonian, 1992, p. 2.
- 4 AP 3000 British Air Power Doctrine, HMSO, 1999, p. 1.2.1.
- 5 AP 3000 British Air Power Doctrine, p. 1.2.1.
- 6 AP 3000 British Air Power Doctrine, pp. 1.2.3-1.2.8.
- 7 AP 3000 British Air Power Doctrine, p. 1.2.3.
- 8 AP 3000 British Air Power Doctrine, pp. 1.2.4-1.2.5.
- 9 AP 3000 British Air Power Doctrine, pp.1.2.4-1.2.5.
- 10 Lawrence Freedman, and Efraim Karsh, *The Gulf Conflict*, Faber and Faber, 1994, pp. xlv-xlv.
- 11 Operation RESTORE HOPE took place from December 1992 – May 1993, and was aimed at securing the safe delivery and distribution of humanitarian aid within Somalia.
- 12 House of Commons Select Committee on Defence, 'Fourteenth Report: The Kosovo Campaign', 23 November, 2000, at <http://www.publications.parliament.uk/pa/cm199900/cmselect/cmdfence/347/34720.htm>
- 13 House of Commons Select Committee on Defence, 'Fourteenth Report'.
- 14 House of Commons Select Committee on Defence, 'Fourteenth Report'.
- 15 Group Captain Andrew Lambert, *The Psychology Of Air Power*, RUSI Whitehall Paper Series, 1994, p. 4.
- 16 DELIBERATE FORCE was the NATO designate for the air campaign in the Balkans, beginning in 1995.
- 17 John Tirpak, 'Deliberate Force', *Air Force Magazine*, October, 1997, p. 39.
- 18 Collateral damage is defined as damage to property or personnel adjacent to, but not constituting part of, an authorised target.
- 19 The United States Air Force B-2 Spirit bomber is capable of carrying 16 Joint Direct Attack Munitions (JDAM), enabling a single aircraft to initiate a parallel attack against 16 separate targets.
- 20 Merrill McPeak, 'Precision Strike: The Impact on the Battle Space', *Military Technology*, (May 1999), pp. 20-24.
- 21 House of Commons Select Committee on Defence, 'Fourteenth Report'.



22 It costs approximately \$14,000 to transform a 'dumb bomb' into a global positioning system guided munition, using a JDAM tailkit. Source: Wing Commander Ken Smith, Air Warfare Centre, RAF Cranwell.

- 23 Lawrence Freedman, and Efraim Karsh, *The Gulf Conflict*, Faber and Faber, 1993, pp. 326-327.
- 24 Wing Commander Greg Bagwell, 'Precision Weapons: Considerations for their employment', *Air Power Review*, Vol. 2, no.1 (Spring 1999), pp. 1-14.
- 25 Daniel Byman, *et al.*, *Air Power As A Coercive Instrument*, RAND, 1999, pp. 107-26.
- 26 AP 3000 British Air Power Doctrine, p. 2.6.1.
- 27 Hallion, *Storm Over Iraq*, p. 191.
- 28 Hallion, *Storm Over Iraq*, pp. 192-93.
- 29 Hallion, *Storm Over Iraq*, p. 190.
- 30 Hallion, *Storm Over Iraq*, p. 190.
- 31 Stephen Biddle, 'Victory Misunderstood: What the Gulf War Tells Us about the Future of Conflict', *International Security*, Vol. 21, no. 2 (Fall 1996), pp. 139-79.
- 32 George Bush, in Grant Hammond, 'Myths of the Gulf War: Some Lessons Not to Learn', *Air Power Review*, Vol. 3, no. 2 (Summer 2000), p. 68.
- 33 Hallion, *Storm Over Iraq*, p.181.
- 34 Hallion, *Storm Over Iraq*, p. 179.
- 35 Mason, *Air Power*, p. 160.
- 36 House of Commons Select Committee on Defence, 'Fourteenth Report'.
- 37 House of Commons Select Committee on Defence, 'Fourteenth Report'.
- 38 General Michael Short, in Daniel Byman, and Matthew Waxman, 'Kosovo and the Great Air Power Debate', *International Security*, Vol. 24, no. 4 (Spring 2000), pp. 22-23.
- 39 General Wesley Clark, and Brigadier General John Corley, 'Press Conference on the Kosovo Strike Assessment', 16 September, 1999, at <http://www.nato.int/kosovo/press/p990916a.htm>
- 40 House of Commons Select Committee on Defence, 'Fourteenth Report'.
- 41 Tim Judah, *Kosovo: War And Revenge*, Yale University Press, 2000, p. 241.
- 42 Judah, *Kosovo*, p. 309.
- 43 House of Commons Select Committee on Defence, 'Fourteenth Report'.
- 44 AP 3000 British Air Power Doctrine, p. 3.13.8.
- 45 Colonel Robert Owen, 'Aerospace and Land Power in Peace Operations: toward a new basis for synergy', *Air Power Review*, Vol. 2, no. 4 (Winter 1999), p. 27.
- 46 Owen, 'Aerospace and Land Power in Peace Operations', pp. 26-47.
- 47 Peter van Blyenburgh, 'UAVs: Where Do We Stand?', *Military Technology*, March, 1999, p. 30.
- 48 Judah, *Kosovo*, p. 260.

## BIBLIOGRAPHY

### BOOKS

- AP 3000, *British Air Power Doctrine*, HMSO, 1999.
- Daniel Byman, *et al.*, *Air Power As A Coercive Instrument*, RAND, 1999.
- Greg Campbell, *The Road To Kosovo: A Balkan Diary*, Westview Press, 2000.
- Carl Von Clausewitz, *On War*, Princeton University Press, 1984.
- Stuart Croft, and Terry Terriff, ed., *Critical Reflections On Security And Change*, Frank Cass, 2000.
- Lawrence Freedman, ed., *War*, Oxford University Press, 1994.
- Lawrence Freedman, ed., *Strategic Coercion: Concepts And Cases*, Oxford University Press, 1998.
- Lawrence Freedman, and Efraim Karsh, *The Gulf Conflict*, Faber and Faber, 1993.
- Robert Grant, *The RMA: Europe can keep in step*, The Institute For Security Studies Western European Union Occasional Papers 15, 2000.
- Tim Judah, *Kosovo: War And Revenge*, Yale University Press, 2000.
- Richard Hallion, *Storm Over Iraq: Air Power and the Gulf War*, Smithsonian, 1992.
- Michael Ignatieff, *Virtual War: Kosovo and beyond*, Chatto and Windus, 2000.
- Michael Klare, and Yogesh Chandrani, *World Security: Challenges For A New Century*, St Martin's Press, 1998.
- Group Captain Andrew Lambert, *The Psychology Of Air Power*, RUSI Whitehall Paper Series, 1994.
- Group Captain Andrew Lambert, and Arthur Williamson, ed., *The Dynamics of Air Power*, HMSO, 1996.
- Ronnie Lipschutz, ed., *On Security*, Columbia University Press, 1995.
- Air Vice Marshal Tony Mason, *Air Power: A Centennial Appraisal*, Brassey's, 1994.

## ARTICLES

Bob Algarotti, 'Unpowered precision guided weapons', Defence Procurement Analysis, Spring, 2000, pp. 122-24.

John Allison, 'The Future of Air Power: A European Perspective', Military Technology, May, 1999, pp. 6-11.

Wing Commander Greg Bagwell, 'Precision Weapons: Considerations for their employment', Air Power Review, Vol. 2, no. 1 (Spring 1999), pp. 1-14.

Graham Banks-Popple, 'Stand-off weapons', Defence Procurement Analysis, Spring, 2000, pp. 127-30.

Correlli Barnett, 'The Fallibility Of Air power', RUSI Journal, October, 2000, pp. 59-62.

Duncan Bell, 'The Seductive Promise Of Air Power: Strategic coercion in Vietnam', Air Power Review, Vol. 3, no. 2 (Summer 2000), pp. 38-53.

Eitan Ben-Eliahu, 'Air Power in the 21st Century', Military Technology, April, 2000, pp. 38-43.

Stephen Biddle, 'Victory Misunderstood: What the Gulf War Tells Us about the Future of Conflict', International Security, Vol. 21, no. 2 (Fall 1996), pp. 139-179.

Peter van Blyenburgh, 'UAVs: Where Do We Stand?', Military Technology, March, 1999, pp. 29-45.

Wing Commander Andrew Brookes, 'Above And Beyond?: Capabilities Of Out-Of-Area Air Power', RUSI Journal, October, 1993, pp. 27-32.

Daniel Byman, and Matthew Waxman, 'Kosovo and the Great Air Power Debate', International Security, Vol. 24, no. 4 (Spring 2000), pp. 5-38.

General Wesley Clark, and Brigadier General Corley, 'Press Conference on the Kosovo Strike Assessment', 20 September, 1999, at <http://www.nato.int/kosovo/press/p990916a.htm>.

Eliot Cohen, 'A Revolution in Warfare', Foreign Affairs, Vol. 75, no. 2 (March/April 1996), pp. 37-53.

Eliot Cohen, 'The Mystique of US Air Power', Foreign Affairs, Vol. 73, no. 1 (January/February 1994), pp. 109-24.

Department Of Defence, 'Report To Congress: Kosovo/Operation ALLIED FORCE After-action Report, US Department Of Defence, 31 January, 2000.

Group Captain Peter Gray, 'Air Power in the Modern World: Myths and Challenges', Air Power Review, Vol. 3, no. 3 (Autumn 2000), pp. 1-14.

Group Captain Peter Gray, 'Air operations for Strategic Effect: theory and practice in Kosovo', Air Power Review, Vol. 3, no. 1 (Spring 2000), pp. 17-31.

Group Captain Peter Gray, 'Air Power And Coercion', RUSI Journal August, 2000, pp. 37-40.

Group Captain Peter Gray, 'Air Power or Aerospace Doctrine 2010?', Air Power Review, Vol. 3, no. 2 (Summer 2000), pp. 7-17.

House of Commons Select Committee on Defence, 'Fourteenth Report: The Kosovo Campaign', 23 November, 2000, at <http://www.publications.parliament.uk/pa/cm199900/cmselect/cmdfence/347/34711.htm>.

General John Jumper, 'Kosovo Victory: a Commander's Perspective', Air Power Review, Vol. 2, no. 4 (Winter 1999), pp. 1-10.

Tony Mason, 'The air war in the Gulf', Survival, Vol. 33, no. 3 (May/June 1991), pp. 211-29.

Merrill McPeak, 'Precision Strike: The Impact on the Battle Space', Military Technology, May, 1999, pp. 20-24.

Phillip Mellinger, 'The Future of Air Power: Observations from the Past Decade', Air Power Review, Vol. 3, no. 1 (Spring 2000), pp. 48-68.

David Mets, 'To Kill A Stalking Bird', Air Power Review, Vol. 2, no. 4 (Winter 1999), pp. 48-67.

Ministry Of Defence, 'Lessons Learned From The Action In Kosovo', 5 June, 2000, at [http://www.mod.uk/news/prs/114\\_00.htm](http://www.mod.uk/news/prs/114_00.htm).

Colonel Robert Owen, 'Aerospace and Land Power in Peace Operations: toward a new basis for synergy', Air Power Review, Vol. 2, no. 4 (Winter 1999), pp. 27-47.

Thomas Quiggin, 'Do airstrikes amount to an effective policy?', RUSI Journal, (April/May 1999), pp. 15-18.

Tim Ripley, and Stewart Penney, 'Kosovo bombing misses the target, says MOD report', Flight International, 15-21 August, 2000, p. 4.

Group Captain John Thomas, 'The Future Of Air Power?', Air Power Review, Vol. 3, no. 1 (Spring 2000), pp. 71-81.

John Tirpak, 'Deliberate Force', Air Force Magazine, October, 1997, pp. 36-43.

Air Commodore Andrew Vallance, 'Did we Really have a Good War?: myths in the making', The Officer, (January/February 2000), 28-30.

Air Marshal Sir John Walker, 'Did Air Power Work In The Balkans?: Of Course It Did!', RUSI Journal, October, 2000, pp. 63-65.



A Japanese fighter jet, possibly a Mitsubishi F-2, is shown in flight against a clear blue sky. The aircraft is heavily armed with various missiles and bombs. It has a grey camouflage paint scheme with red and white markings. The text "The Essence of Coercive Air power:" is overlaid in large, bold, black letters. Below it, the subtitle "A Primer for Military Strategists" is written in smaller, red letters. In the top right corner, there is a small blue and red logo.

# The Essence of Coercive Air power:

**A Primer for Military Strategists**



## INTRODUCTION

This essay is designed to provide the warfighter with a basic and somewhat informal overview of coercion, emphasizing but not limited to the coercive use of air power.<sup>1</sup> The subject is central to almost all military strategy, yet it is not often addressed in a systematic way in either military education or military doctrine. This lack of comprehensive attention is due to a variety of factors, ranging from the philosophical misperception that because it is a matter of politics, coercion falls outside the principal sphere of military concern, to the practical obstacles to study that are posed by a field developed by independent theorists who often do not share even a common vocabulary. This article will argue that it is nevertheless essential for the strategist – especially the air power strategist – to understand the essentials of military coercion, and will try along the way to dispel some of the ‘fog of theory’ that often clouds this subject.

## COERCION AND WARFARE

Coercion, in its broadest sense, is causing someone to choose one course of action over another by making the choice that the coercer prefers appear more attractive than the alternative. In the international arena, coercion is usually intended to change the behavior of states, and this essay will focus on states as the targets of coercion, although most of what follows also applies to other sorts of coercion. Similarly, this discussion will center around the use of coercion for major security issues, such as deterring war, compelling surrender in wartime or the sacrifice of national territory, and the like, although much coercion involves far less serious stakes.

This definition of coercion obviously covers a lot of theoretical ground. First, it includes both deterrence and compellence, that is efforts to make the adversary not do something it otherwise might do (such as attacking the coercer) and efforts to make the adversary take an action it otherwise would not (such as ceding territory to the coercer). There are important differences





between *deterrence* and *compellence* – mainly, other things being equal, compellence tends to be more difficult than deterrence because of factors such as policy inertia – but the two forms of coercion resemble each other far more than they differ. Moreover, much coercion falls into the gray area between deterrence and compellence, such as coercion intended to make an adversary halt an invasion; this can be interpreted either as compelling the enemy to stop, or as deterring the enemy from advancing further. In such cases, drawing a clear line between deterrence and compellence becomes a matter of pure semantics, so it is usually better to think of deterrence and compellence as opposite ends of a continuum rather than separate and distinct categories.<sup>2</sup>

Second, this definition does not say anything about the means being used to coerce the adversary. Coercion can involve the threat or actual use of military force,<sup>3</sup> economic sanctions, or a whole range of other political pressures. Usually it involves more than one at the same time. Of course there are differences between coercion using threats of war and coercion through threats of diplomatic criticism, for example, but most of the same basic principles apply to coercion regardless of the tools being employed. Similarly, coercion need not involve gradual escalation in the application of force; this is obvious for deterrence, but even in compellence there is no requirement that coercive force be applied in a restrained or limited manner.

Finally, this definition does not exclude coercion through promises and rewards instead of threats and punishment, which may seem strange. It is certainly possible to treat ‘positive sanctions’ as something separate from coercion – after all, in everyday life ‘coercion’ refers to something negative, such as your boss’s threat to fire you if you don’t work overtime, but not an offer to pay you extra as an incentive to do so. However, drawing this line is not actually as easy as it sounds. Coercion depends not just on making what you want the adversary not to do appear unappealing, but on making it look less appealing than what you want them to do instead. Thus policies that make complying with coercive demands attractive have the same effect as those that make resisting unattractive, and the coercive strategist must pay attention to both sides of the balance. In addition, many of the same factors that determine whether a coercive threat will be effective also apply to promises, though there are some interesting differences between the two.<sup>4</sup> This essay will return to the subject of coercion through rewards later, although it will focus mainly on coercion through threats of harm since this is how coercive air power is most often used.

## ***PUNISHMENT, DENIAL, AND DESTRUCTION***

Coercive force – either threatened or applied – is intended to change the behavior of the adversary. Thus it differs from force that is employed for the simple purpose of destroying a target.<sup>5</sup> At the tactical level of war, ‘pure force’ predominates, for the goal of attacks is usually the physical destruction or incapacitation of an enemy unit or vehicle. In contrast, at the strategic level destruction is rarely the ultimate goal of armed force. There are exceptions to this generalization – for example, the 1981 Israeli attack against the Osirak nuclear reactor, which was intended to destroy the target and thus temporarily cripple Iraq’s nuclear weapons program, and was (presumably) not expected to discourage Baghdad from continuing to pursue nuclear weapons



development or to intimidate Iraq into a less anti-Israeli foreign policy – but these are relatively uncommon. When a state seeks to make an enemy surrender, it is engaged in coercion, for the goal is to cause the enemy to *choose* to capitulate. Wars in which no surrender will be accepted do occur, but they tend to be very expensive to fight. Of course, coercion usually seeks concessions much more limited than national surrender.

It is useful to think of purely destructive force and purely punitive coercion as opposite ends of a spectrum. At the *destruction* pole are efforts to produce entirely physical effects, such as the annihilation or incapacitation of an adversary state. This may of course change the enemy's behavior, by removing the capability to take some action that the attacker does not like, but it does not cause the target state to choose not to do something, so it is indifferent to the enemy's will. Destruction is conceptually simple, but can be difficult to carry out if the goal is an ambitious one, like entirely eliminating an adversary's ability to fight.

At the other end of the spectrum lies coercive *punishment*, the use of force to change the adversary's policy choice without affecting its abilities. Examples of such policies using air power range from huge assured destruction threats designed for deterring nuclear attacks to minor punitive raids such as the 1986 U.S. strike against Libya or Israel's frequent retaliatory strikes against terrorist targets in Lebanon. Executing such an attack has no significant effect on the adversary's ability to take or persist in the undesired action, but instead the attack (or just the threat of it) seeks to make the enemy choose to comply with coercer's demands because this appears to be a better choice than not complying. Although in practice many forms of punishment do have some collateral effect upon the enemy's capabilities, punitive coercion essentially seeks directly to affect the enemy's will to resist rather than their ability to do so.

Between these extremes lies another approach to coercion, typically called *denial*. Denial involves changing the enemy's behavior by making the undesired course of action appear pointless, either through actually reducing the enemy's ability to carry it out successfully, or by persuading the enemy that it lacks the ability to succeed. Instead of raising the costs of defiance to the point that compliance appears preferable even to successful resistance, denial makes defiance appear unlikely to succeed, in the hope that the enemy will consider compliance to be better than defiance that will ultimately fail anyway. In short, denial seeks to change the enemy's will to resist by reducing their perceived capability for resistance, reducing the adversary's perceived options to a choice between surrendering now and surrendering later.

Denial has much in common with destruction: both seek to make the enemy's objectives unachievable in some sense, and usual focus on attacking military forces or the resources and infrastructure that support them. However, denial is coercive, for it is directed against the adversary's beliefs about the future, and it calls upon the adversary to make a policy choice. Destruction is a matter of objective reality. The attacks one mounts in a denial strategy are likely to resemble those contained in a pure destruction campaign, since the best way to convince someone that defeat is inevitable is usually to make it inevitable; however, a strategy to make an adversary surrender is likely to have significant differences from an effort simply to destroy the enemy outright.<sup>6</sup>





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## **COERCION AND VICTORY**

Destruction is simpler than coercion. Of course, making purely destructive military strategy is difficult enough, since warfare is a complicated business that can take a lifetime to master, even for an

unusually clever general. But making good coercive strategy requires understanding not only military art and science, but also additional layers of politics (and often economics and psychology), since it is necessary to predict both what the enemy will be able to do, and what the enemy will choose to do given its capabilities, at the grand strategic as well as the military level.

Yet most warfare is to a greater or lesser degree coercive. States usually seek the capitulation of their enemies rather than their complete incapacitation, although denial strategies sometimes make it possible to pursue both goals at the same time, by allowing the coercer to fall back on a strategy of destruction if coercion fails (as the Allies did against Germany in World War II). The reasons are obvious: bringing the contest to an end while the enemy still has the means to resist offers the prospect of conflicts that are less expensive for the coercer and probably for the enemy as well, and successful coercion may avert warfare altogether through deterrence or compellence that relies on threats rather than the actual use of force. Often states pursue coercion in situations where they would never consider seeking victories through pure force because the costs of doing so would be prohibitively high.<sup>7</sup> This is particularly true when the stakes are less than vital interests for the coercer.<sup>8</sup>

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Thus, coercion is successful when the adversary complies with the coercer's demands, and would not have done so in the absence of the coercive effort. Coercion has failed if the adversary does not comply with the coercer's demands; in the case of deterrence, failure is easy to recognize, while unsuccessful compellence can end with the coercer backing down, or with the coercer pressing ahead and achieving its goals through brute force. If the coercer's demands are met, but not because of the coercer's threats, coercion is neither successful nor unsuccessful, but merely irrelevant to the outcome; this often happens in deterrence, when a state seeks to deter an attack that the adversary had little inclination to launch in the first place. As a result, even long after

the fact it can be difficult to determine with certainty whether a particular coercion effort succeeded or not if the adversary acted in accordance with the coercer's wishes.

Simple assessments of the success or failure of coercion can be complicated further when the adversary complies with some of the coercer's demands but not all of them. Such cases are common, and can lead to endless debates over whether the result should be counted in the win or the loss column of the coercion scorecard. It is better by far to recognize that coercive success is rarely an all-or-nothing affair, and since coercion results will frequently be ambiguous the analyst should consider what was and was not achieved through coercion rather than worrying too much about how to label the outcome.<sup>9</sup>

## REQUIREMENTS FOR COERCION

Because coercion is a matter of the adversary's perceptions, it depends entirely on a set of subjective factors, some of which are more obvious than others at first glance. The most commonly listed items on coercion checklists are the credibility, capability, and communication that lie behind coercive threats, but there is more to coercion than these 'three Cs'.

*Credibility* is the most often discussed feature of coercive threats. A threat will only carry coercive weight to the degree that the adversary believes the coercer will actually carry it out if compliance is not forthcoming.<sup>10</sup> Whether the adversary's perception is correct is irrelevant, all that matters is how much the threat is believed. This does not mean that coercive threats must be entirely believable, however. Even a small chance that a coercer will follow through on a threat to inflict great harm (such as launching a nuclear attack) may be sufficient to carry considerable coercive weight. In general terms, the more frightening a threatened action is, the less credible it needs to be. This works out nicely, because more severe threats are typically – but not always – more expensive to carry out, and thus are less likely to be entirely credible, than milder ones, since the coercer has greater incentives to renege on costly threats than inexpensive ones.<sup>11</sup> Because credibility is so central to coercion, and can often be quite difficult to establish, a large proportion of coercion theory is devoted to discussing ways in which the credibility of threats can be enhanced.<sup>12</sup>

*Capability* is also a vital but often neglected part of coercion. If the adversary does not believe that the coercer has the ability to carry out a coercive threat, it is worthless as a coercive instrument, even if the coercer's will to try is not in doubt. Although it



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goes hand-in-hand with credibility, capability usually draws far less attention in coercion theory, largely because American nuclear strategists (whose concerns dominated coercion theory for most of the cold war) have long been able to count on a great surplus of coercive capability. However, capability can become quite problematic for less powerful states, and even for the United States in areas such as economic sanctions, or conventional military coercion against states that are not military pygmies.

*Communication* plays a secondary but important role in coercion. Coercive demands and threats must be communicated in order to be effective, which is often a simple matter, but one that can become challenging if the messages involved are complex and the coercer wishes to send them through actions rather than words. It is equally critical to communicate what will happen if the adversary does accede to the coercer's demands, since threats of harm need to be recognized as being conditional on the target state's behavior if they are to encourage compliance.

It is often suggested – usually by coercion skeptics – that coercion requires the adversary to behave rationally, but this is not entirely correct. Coercion theory does assume a minimal degree of rationality in the target state's behavior, since it must choose to follow the course of action it prefers rather than those that it does not prefer. However, it is more accurate to say that coercion theory simply requires that the adversary not behave completely irrationally, for even if a less-than-perfectly-rational state tends to make poor decisions as a result of its handicap, a big enough coercive threat ought to be able to overcome the interference. Of course, a state's behavior can fall short of the rational ideal for many reasons – including mentally defective

leaders, organizations and interest groups pursuing parochial instead of national interests, inefficient government bureaucracies, imperfect information, motivated and cognitive biases – which may make coercion either easier or more difficult, depending on the details of the case. However, truly irrational state behavior, which should not be confused with states rationally pursuing objectives that seem senseless or unfathomable to others, is very unusual in the international system.

A final factor that profoundly shapes the success and failure of coercion often receives less attention than it deserves: the interests at stake in the confrontation. Whether the adversary will comply with the coercer's demands or instead resist them to the death ultimately depends more than anything else

*It seems obvious that almost nothing will persuade most states to sacrifice their sovereignty or national survival, while even very limited pressure may be enough to coerce an adversary to give up something trivial*



**British troops raise the Falkland Islands Flag outside Government House.**

on what is being demanded. It seems obvious that almost nothing will persuade most states to sacrifice their sovereignty or national survival, while even very limited pressure may be enough to coerce an adversary to give up something trivial. Yet observers persist in treating the failure of feeble pressure to produce huge coercive concessions as significant – the ‘failure’ of the U.S. grain embargo against the USSR in response to the 1979 Soviet invasion of Afghanistan is one of the more striking cases of this sort. The same pattern sometimes appears in discussions of coercive air power.

The fact that stakes are central to coercion does not mean, however, that the side in a dispute that cares more about the dispute will necessarily prevail. Coercion is indeed usually competitive, with the target state seeking in turn to coerce the coercer to abandon its efforts.<sup>13</sup> Thus, if the two sides have similar resources to apply to the contest, a disparity in interests may determine which side gives up first. However, it is typical for one state to be more powerful than the other, in which case superior strength may overcome superior commitment. In the end, it is the state with the greater will to win relative to the coercive pressure being applied against it that should prevail. The next section attempts to represent these dynamics in a more systematic way.

## THE COERCION CALCULUS

Coercion is a matter of changing the adversary’s expectations to make compliance with the coercer’s demands appear more attractive than resisting them (for deterrence, this means making not attacking look like a better option than attacking). In more concrete terms, this can be desegregated into a set of distinct but interconnected variables: the expected benefits and costs of compliance, the benefits and costs anticipated from successful and from unsuccessful resistance, and the expected probability that resistance will succeed.<sup>14</sup> Ideally, the coercer would like to maximize the expected costs of resistance and benefits of compliance, and to minimize the benefits of resistance, the likelihood that resistance will be successful, and the costs of compliance.

Punishment strategies seek to increase the costs of resistance, and can be directed against anything the enemy values, including civilian population, military forces, economic wealth, national infrastructure, or international influence. Punitive coercion is intended to cause fear of future pain, as in Giulio Douhet’s prescription for city bombing; inflicting actual pain may be a means to



**Russian soldiers patrol the streets of Grozny during the Chechen War.**

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this end, but only destruction strategies cause pain for its own sake. Because pure punishment strategies do nothing to help the coercer if coercion fails, the credibility of punishment threats is likely to be questioned if they are costly to carry out.

Denial strategies seek to reduce the likelihood that resistance will be successful, most often attacking the adversary's ability to fight by damaging military forces or the industry and other systems that sustain them. Where punishment strategies rely upon anticipated pain for coercion, denial strategies seek to cause hopelessness. Since reducing the enemy's chances of successful resistance usually increases the coercer's prospects for achieving a pure force victory if coercion fails, denial threats tend to be relatively credible, though the more expensive they are to carry out, the less true this will be.

On rare occasions reducing the expected benefits of successful resistance can be an important element of coercion, for example in the case of deterrent scorched earth threats to destroy assets that a prospective invader might hope to acquire through aggression.

Finally, a variety of positive sanctions can be used to reduce the costs and increase the benefits of complying with the coercer's demands. Both reassurance and bribery involve dangers of encouraging blackmail in the future, but they can be an effective and efficient way of achieving coercive objectives in many cases.

In practice, a single threat or application of force will frequently have both punishment and denial (and often destruction as well) effects. This is certainly true of coercive air power, which almost always inflicts pain while pursuing denial (for example, in bombing enemy war industry or troops in the field), and usually damages military capabilities when inflicting punishment (such as bombing civilian infrastructure). However, the terms of the coercion calculus can also interact in more complicated ways than simple 'two-for-one' effects. For example, developing the ability to defeat an attacker can also encourage aggression if it frightens one's neighbors.<sup>15</sup>

## **COERCIVE STRATEGY**

Given this menu of strategic options, what sorts of coercive strategies are best? The logic of coercion indicates that success is most likely when the expected net costs of resistance are high, when the costs of compliance appear low, and when there is little or no prospect that resisting the coercer's demands will lead to a result that would be better than complying with them. The higher the stakes, the more important denial will become, because the harder it will be to make the costs of successful resistance outweigh its expected benefits.<sup>16</sup> This does not, however, tell the strategist very much about how to go about making good coercive strategy.

Perhaps the most useful piece of guidance to be found in the coercive air power literature is Robert Pape's admonition for strategists to focus not on the targets to be attacked, but on the coercive mechanism that they expect will lead to the

*From Giulio Douhet to John Warden and beyond, the evolutionary history of air power theory is littered with strategies built on fatally flawed, or just severely underdeveloped, coercive mechanisms...*

Coercive mechanisms usually include many things, either explicitly or implicitly, including expectations about the second- and third-order effects that will follow from air attacks, theories about how the enemy makes policy decisions, models of how the enemy's armed forces, economy, and society work, and beliefs about the individual and collective psychology of enemy leaders and citizens. From Giulio Douhet to John Warden and beyond, the evolutionary history of air power theory is littered with strategies built on fatally flawed, or just severely underdeveloped, coercive mechanisms.<sup>18</sup>

Looking across this varied intellectual history, some recurrent patterns of error appear. Many air power theorists have made the mistake of assuming that enemy societies are fragile mechanisms that can be easily and catastrophically disrupted by bombing, when in fact their economies and morale both tend to be fairly resilient.<sup>19</sup> This is especially true of very modern states, whose robust economies and educated populations give them great – and frequently underestimated – capacity for adaptation.<sup>20</sup>

Similarly, airmen are often seduced by the quest for small but critical 'panacea target' sets, the destruction of which they optimistically believe will unhinge the adversary's will or ability to resist – yet some, such as Arthur Harris, have erred in the other direction, failing to recognize that some targets really are more important than others. In reality, opportunities do exist to achieve both physical and coercive effects against some adversaries that are quite out of proportion to the limited effort required for the attacks, but identifying these usually requires very serious

*...a strategy that applies relatively small amounts of pressure in an effort to cause the adversary to sacrifice vital interests is almost certainly doomed to failure from the outset, as the United States eventually discovered in Vietnam*

and sophisticated analysis of the specific adversary's economy, society, and military, rather than a simple list of standard target sets.<sup>21</sup> Many coercive mechanisms fail to desegregate the enemy, treating as unitary an adversary that in reality needs to be understood as a group of competing governmental or domestic interests, each of which may respond differently to a particular coercive policy.<sup>22</sup> Finally, some strategies

strategy achieving its political objective.<sup>17</sup> In short, a coercive target set is only as important as the chain of events that attacking it will trigger, so *what* to attack should be decided only after the strategist knows *why* to attack it.



**A USAF F-105 Thunderchief 'Thud' releases bomb on ground target.**



are built on false analogies between people and states, assuming for example that the cumulative psychological effects of bombing upon entire societies or governments are merely a larger version of bombing's tactical-level shock effects upon individuals.

## MAKING COERCION WORK

Given potential pitfalls such as these, how can the coercive air strategist maximize the chances of succeeding? There is no simple prescription for coercive success, but historical experience does provide some guidance, much of it in the form of reasons why coercion often fails.

Many coercion failures can be attributed to a straightforward mismatch between coercive pressures and political demands. The importance of the stakes in coercion cannot be overstated, and a strategy that applies relatively small amounts of pressure in an effort to cause the adversary to sacrifice vital interests is almost certainly doomed to failure from the outset, as the United States eventually discovered in Vietnam.<sup>23</sup> Other failures can be attributed to the sorts of inadequate or faulty coercive mechanisms described above, leading to underestimating the enemy's physical or psychological resilience; this had much to do with the failures of coercive air power (and blockade) against Britain and Germany in the Second World War, and against the Afghan resistance in the 1980s. Finally, failures can result from operational defects in the application of force – failing to inflict the damage called for by the strategy, or abandoning a sound strategy before it has time to work. All of these are problems that an astute strategist can do much to avoid.

However, coercive air power also faces limitations that no amount of cleverness can entirely overcome. Bureaucratic inertia and emotional resistance will almost always cause coercion to be slower than purely rational models would predict. Conflicts and major crises tend to make the perceived importance of the issues in dispute rise over time, as lives are lost, nationalist rhetoric escalates, and leaders' reputations are staked on victory. Conceding to the coercer's demands will sometimes appear to represent a death sentence to enemy leaders, either figuratively or literally, which may be sufficient to make them resist no matter how costly and pointless doing so becomes. On the technological front, precision-guided weapons are only useful if there are suitable (and identifiable) targets for them to attack. All of these factors, and others, mean that air power is not an omnipotent coercive instrument, though its capabilities have increased dramatically during the past generation.

*It is important to recognize that in some cases, not even the best possible coercive strategy will produce success, even for a coercer as powerful as the United States*

As an imperfect rule of thumb, it is fair to say that coercion has a good chance of succeeding if the coercer can bring about four related conditions, and do so prior to succumbing to the enemy's counter-coercion. First, the enemy should believe that victory is impossible, because even a slim hope of eventual success may be sufficient



motivation to hold out against great coercive pressure. Second, particularly if the stakes are high, the enemy should be further convinced that continued resistance offers no hope of leading to any result better than complying with the current demands would be; even when victory appears out of reach, the enemy is likely to grasp at straws such as the prospect of forcing a negotiated compromise settlement. Third, surrender now should appear to be a better deal than surrender later, either because resistance is costly, or because the terms being demanded are likely to become more severe as time passes; otherwise, even futile resistance will not be unattractive. Finally, complying with the coercer's demands must be at least minimally acceptable to the enemy in absolute terms, for if surrender looks too awful to contemplate, then any alternative is likely to appear preferable, no matter how unpleasant, hopeless, or desperate. Coercion may actually succeed without achieving all of these conditions, particularly if the coercer's demands are not great, but failure to fulfill any of them may be sufficient to make a coercive strategy fail.

It is important to recognize that in some cases, not even the best possible coercive strategy will produce success, even for a coercer as powerful as the United States. Sometimes a coercer will lack the resources or the ability to carry out a sufficiently powerful coercive strategy to achieve its ends, while there are occasional cases in which coercing the enemy is beyond the means of any state, or even the entire international community. On the other hand, there are always strategic options that are ill-conceived enough to fail. For the air power strategist, it is necessary not only to be able to craft optimal strategies for coercion, but also to be able to identify cases in which no strategy promises success at a reasonable price, and other instruments of power – or a policy other than coercion – are required. Developing the expertise in coercion required to do these things is an intellectually challenging task of the highest order, but without mastery of coercion, there is no full mastery of war.

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## NOTES

- 1 For lengthier and more detailed discussions of many of these subjects by the same author, see Karl Mueller, 'Strategies of Coercion: Denial, Punishment, and the Future of Air Power,' *Security Studies*, Vol. 7, No. 3 (Spring 1998), pp. 182–228, and 'Strategic Airpower and Nuclear Strategy: New Theory for a Not-Quite-So-New Apocalypse,' in Phillip S. Meilinger, ed., *Paths of Heaven: The Evolution of Airpower Theory* (Maxwell AFB, Ala.: Air University Press, 1997), pp. 279–320. On coercive air power in particular, see also Robert A. Pape, *Bombing to Win: Air Power and Coercion in War* (Ithaca: Cornell University Press, 1996), and Daniel Byman, Matthew Waxman, and Eric Larson, *Air Power as a Coercive Instrument*, MR-1061-AF (Santa Monica: RAND: 1999).
- 2 On deterrence and compellence, see Thomas C. Schelling, *Arms and Influence* (New Haven: Yale University Press, 1966), pp. 69–91. On defining coercion, see among others Thomas W. Milburn, 'What Constitutes Effective Deterrence?' *Journal of Conflict Resolution*, Vol. 3, No. 2 (1959), pp. 138–45, and Lawrence Freedman, ed., *Strategic Coercion: Concepts and Cases* (New York: Oxford University Press, 1998).
- 3 It is probably obvious to the modern reader that deterrence does not have to involve nuclear weapons. As recently as twenty years ago, however, deterrence theory was so strongly associated with nuclear deterrence that many people considered 'conventional deterrence' to be something of a novelty.
- 4 See David Baldwin, 'The Power of Positive Sanctions,' *World Politics*, Vol. 24, No. 1 (October 1971), pp. 19–38.
- 5 For the seminal discussion of coercion and 'brute force,' see Schelling, *Arms and Influence*, ch. 1.



- 6 This distinction between coercion and destruction parallels the relationship between the often conflated concepts of deterrence and defense. Deterrence involves changing the enemy's expectations about what war will be like so they will choose not to attack, while defense involves making war better (or less bad) for yourself if deterrence fails. Since deterrence exists in the mind of the enemy while defense involves real capabilities, secret weapons can defend but cannot deter, and dummy weapons and other bluffs can deter but contribute nothing to defense if deterrence fails (see Glenn H. Snyder, *Deterrence and Defense* (Princeton: Princeton University Press, 1961), ch. 1). The concept of non-defensive deterrents reaches its pinnacle in Stanley Kubrick's 1964 film *Dr. Strangelove* (for which Thomas Schelling was an early script consultant). In the movie, the Soviets have constructed a doomsday machine (a device conceived in the real world by deterrence theorist Herman Kahn), which will automatically destroy the world if the USSR is attacked, thus providing complete deterrence but no defense. Unfortunately, Moscow delays revealing the secret invention, which means it cannot deter the nuclear attack that is then launched by a deranged U.S. Air Force officer.
- 7 This is also why we rely predominantly on coercion to shape human behavior in domestic law enforcement, motor vehicle traffic control, and child rearing, to name just a few non-military spheres of endeavor.
- 8 Because almost all warfare is coercive to some degree, it is nonsensical to argue that military power should not be used for coercion. In fact, most of those who decry coercion as a misuse of the military are actually complaining about particular sorts of military coercion strategies, such as gradual escalation or the use of coercive force in pursuit of minor national interests. It is certainly possible to argue that coercive force should never be used in situations where the coercer is not willing to prosecute the conflict to the point of achieving a victory through pure destruction if coercion fails, but this does profoundly restrict the use and the utility of military power. For elaboration on this point, see Karl Mueller, 'Politics, Death, and Morality in U.S. Foreign Policy,' *Aerospace Power Journal*, Summer 2000, forthcoming.
- 9 See Mueller, 'Strategies of Coercion,' and David A. Baldwin, 'The Sanctions Debate and the Logic of Choice,' *International Security*, Vol. 24, No. 3 (Winter 1999/2000), pp. 80–107.
- 10 Note that a threat that is severely lacking in credibility (or severity) may still have value for purposes other than coercion, for example it may provide domestic political benefits for the government that makes it.
- 11 Credibility works the same way for promises of rewards as for threats of harm, just one of the ways in which positive sanctions resemble negative ones.
- 12 The foremost work on the subject is still Schelling's *Arms and Influence*.
- 13 On this point see Byman, Waxman, and Larson, *Air Power as a Coercive Instrument*, and Daniel Byman and Matthew Waxman, 'Defeating U.S. Coercion,' *Survival*, Vol. 41, No. 2 (Summer 1999), pp. 107–20.
- 14 This can be represented symbolically, for those who are not afraid of algebra, in the following inequality (with successful coercion expected when the left side is greater than the right):
- $$B_C - C_C > P_S(B_{SR} - C_{SR}) + (1 - P_S)(B_{UR} - C_{UR})$$
- where B is benefits, C is costs, C indicates compliance, SR and UR indicate successful and unsuccessful resistance, and PS is the probability that resistance will succeed. For the specific case of deterring aggression, substitute SQ (status quo) for C, V (victory) for S and SR, and D (defeat) for UR. For a longer and more tediously detailed discussion of the coercion calculus, see Karl Mueller, *Strategy, Asymmetric Deterrence, and Accommodation* (Ph.D. diss., Dept. of Politics, Princeton University, 1991).
- 15 On such 'security dilemmas,' see among others Robert Jervis, 'Cooperation Under the Security Dilemma,' *World Politics*, Vol. 30, No. 2 (January 1978), pp. 167–214.
- 16 Robert Pape argues that punitive conventional bombing never works, but his argument is based on the coercive stakes being extremely high. See Pape, *Bombing to Win*, and the analysis in Mueller, 'Strategies of Coercion.'
- 17 See Pape, *Bombing to Win*, chap. 3, and Thomas P. Ehrhard, 'Making the Connection: An Air Strategy Analysis Framework' (Maxwell AFB: Air University Press, 1995).
- 18 Mueller 'Strategies of Coercion,' pp. 186–87. For an historical survey of major air power theories, see Phillip S. Meilinger, ed., *Paths of Heaven: The Evolution of Airpower Theory* (Maxwell AFB, Ala.: Air University Press, 1997).
- 19 See Stephen T. Hosmer, *Psychological Effects of U.S. Air Operations in Four Wars 1941–1991*, MR-576-AF (Santa Monica: RAND: 1996).
- 20 See Mancur Olson Jr., *The Economics of the Wartime Shortage* (Durham: Duke University Press, 1963).
- 21 See Mancur Olson Jr., 'The Economics of Target Selection for the Combined Bomber Offensive,' *Royal United Service Institution Journal*, Vol. 107 (November 1962), pp. 308–14, and Alfred C. Mierzejewski, *The Collapse of the German War Economy, 1944–1945* (Chapel Hill, NC: University of North Carolina Press, 1988).
- 22 On the importance of desegregating different actors and interests within the adversary state, see Jonathan Kirshner, 'The Microfoundations of Economic Sanctions,' *Security Studies*, Vol. 6, No. 3 (Spring 1997), pp. 32–64; Wallace J. Thies, *When Governments Collide: Coercion and Diplomacy in the Vietnam Conflict 1964–1968* (Berkeley: University of California Press, 1980) provides such an analysis of North Vietnam in explaining the failure of Operation Rolling Thunder.
- 23 It is worth noting that many hopeless coercion efforts of this sort are never intended to succeed, but rather are carried out for other reasons, such as domestic or international political consumption.



**SEPCAT Jaguar, from No. 6 Squadron. One of three RAF Coltishall based Jaguar units.**



Has

# Air Power Become the Decisive Factor in Joint Warfare?







Since the inception of air power as an instrument of force in warfare, there have been many claims as to the value of its overall contribution. Many of the perceived capabilities of air power were used to support strong arguments for the original establishment of independent air forces. More recent campaigns have demonstrated that air operations, and the gaining of air superiority in particular, can have a marked effect on the conduct and outcome of modern conflicts. This essay examines the overall value of air power in the joint warfare context to determine whether it can be described as decisive. Historical examples are drawn upon to examine whether there is evidence to support the central claim, and the various ways that air power impacts upon the outcome of joint warfare are considered so as to determine its overall contribution. The role and value of air power is found to be highly dependent on the circumstances of the joint theatre. This essay demonstrates that air power can be critically important to the success of the joint force package, even indispensable, but that the roles of all the elements have a part to play. No one factor can be said to be decisive in all situations: the appropriate employment of all available forces will be the key to success – whatever air power's role may be.





**The Royal Flying Corps was formed in 1912: the Sopwith Pup entered service in 1916.**

*Mitchell, Douhet and Trenchard predicted that air power would revolutionise war and urged intensive development and the establishment of independent air forces*

In considering whether air power's contribution to joint warfare is decisive, it is necessary to examine the precise meaning and inherent assumptions contained within the words. Pivotal to this is the definition of 'decisive'. The Concise Oxford Dictionary defines decisive as: 'acting to settle an issue quickly and effectively'. In addition to the explicit time and performance requirements, the definition suggests that anything decisive must also act to settle an issue. To be the decisive factor in joint warfare, therefore, it is not sufficient to demonstrate that air power is critically important, but rather to show that it is conclusive. Furthermore, the use of

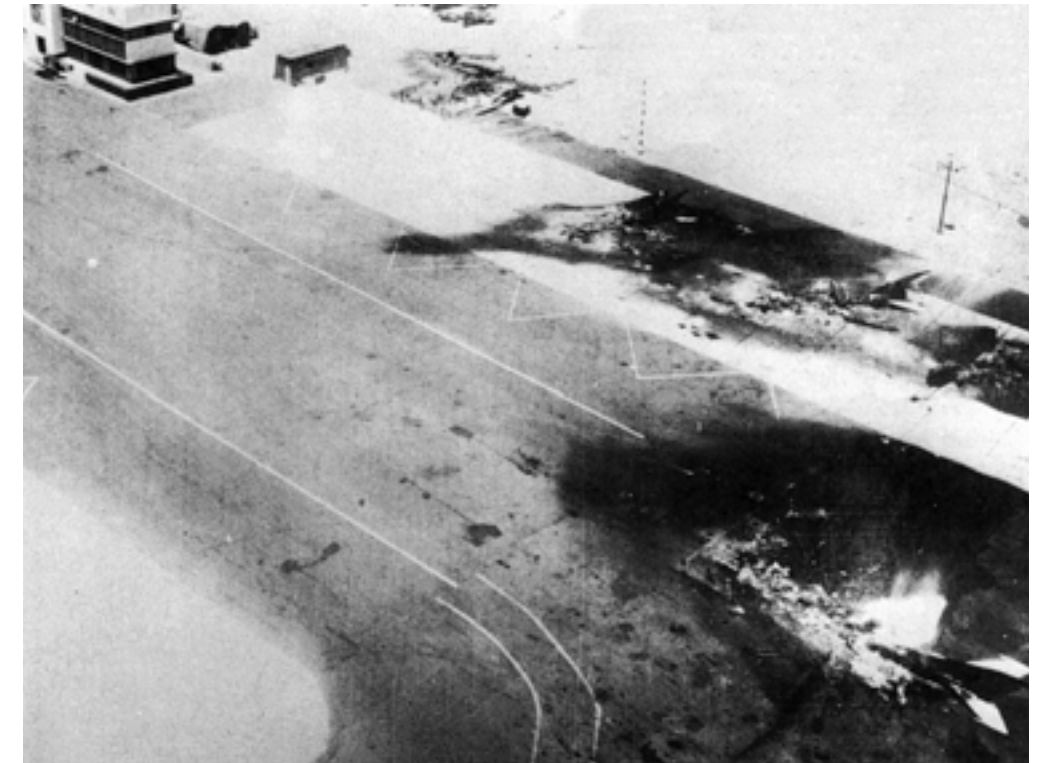
the definite article in the question implies singularity, suggesting that among the factors involved there is one decisive factor that will apply in all joint warfare. The language of the question also requires an historical examination – if air power has become the decisive factor then its overall contribution must have changed over time from supportive to conclusive.

From the early years of aviation the potential importance of air power has been recognised, and this has often led to overstated claims about its capabilities and relative contribution in war. Mitchell, Douhet and Trenchard predicted that air power would revolutionise war and urged intensive development and the establishment of independent air forces. Douhet even suggested that air power could become the instrument of victory in another war; thus, the idea that air power could be decisive is not new. Unfortunately, as Erskine argues, the lack of technological capability to back up the claims of these 'early prophets' left a legacy of unfulfilled promises and false expectations.<sup>1</sup> When considering the question posed in this essay, therefore, it is important not to fall into the same trap – ie, overstating the capabilities of air power to support inflated claims as to its contribution. Air power has significant strengths in terms of prosecuting a joint campaign. Its speed, range, flexibility, firepower, precision and lethality make it an extremely capable and versatile asset. However, it also has its limitations. It is vulnerable not only to enemy air defence but also to natural effects such as bad weather, which might prevent its use, or terrain that might afford the enemy camouflage and protection and hence diminish the effectiveness of air attack. It is also heavily reliant upon accurate and timely intelligence. In the Gulf War, for example, the technological advantages of America's conventional weapons and doctrine were far superior to Iraq's, yet the JFACC was not able to destroy all of Iraq's strategic targets because intelligence could not keep up with the tempo of the campaign.<sup>2</sup>

*...US Army doctrine recognises that: 'the control and use of the air will always affect operations; the effectiveness of air operations in fact can decide the outcome of campaigns and battles'*

So, what is it about the contribution of air power that makes it so beguiling, and leads to claims of decisiveness? Certainly, air superiority/supremacy is seen as a vital ingredient in any modern campaign. Indeed, US Army doctrine recognises that: 'the control and use of the air will always affect operations; the effectiveness of air operations in fact can decide the outcome of campaigns and battles'.<sup>3</sup> Hallion also suggests that in the air power era, loss of air superiority equates to loss of the ability to exercise national prerogatives, and that when a high tech society is stripped of air superiority, it is utterly vulnerable to an enemy, which can attack it as it wishes.<sup>4</sup> This view is exemplified by the success of Israeli air power in the 1967 Arab-Israeli War. Israel's strategy in the Six-Day War recognised that victory had to be quick and decisive. Surprise was the key to success; air power, with its speed, range, flexibility and ability to directly attack enemy centres of gravity, was the only force that could meet the criterion. Israeli armoured forces could then fight the battle under 'clear skies'. And the IAF was free to provide support to the IDF ground forces, without leaving the rear of the state of Israel in danger of air attack.<sup>5</sup> However, despite claims that air power's contribution was decisive, there was still a need for ground force action, supported from the air, to take and hold terrain. Thus, achieving air superiority is only a means to the desired end – permitting both air and surface forces to operate more effectively, while denying these advantages to the enemy.<sup>6</sup> In addition, as Sabin points out, the future effectiveness of air power in this role is uncertain: 'As technologies such as passive SAMs, laser weapons, stealthy airframes, and cruise and ballistic missiles spread to more nations, it may become harder for superior air powers to use aerospace vehicles with impunity while denying their use to the opponent'.<sup>7</sup>

Another significant contribution of air power to modern joint warfare is that it 'defines the battlespace'. The combination of air operations for strategic effect, interdiction and close air support enables joint commanders to shape an environment for the benefit of surface forces.<sup>8</sup> This factor emphasises the supporting role of air power in the joint environment, essentially suggesting that it may not be the conclusive factor. However, it is also possible for the roles to be reversed; Gen Schwarzkopf effectively demonstrated this during Operation Desert Storm: 'He used coalition ground and amphibious forces at the beginning



**Egypt temporarily lost control of its airspace during the six-day war. Such scenes were repeated at most Egyptian airfields, after attack by Israeli forces.**





*...loss of air superiority equates to loss of the ability to exercise national prerogatives, and that when a high tech society is stripped of air superiority, it is utterly vulnerable to an enemy, which can attack it as it wishes*

of the campaign to 'fix' Iraqi units into positions where air interdiction could inflict terrible destruction...while simultaneously denying these units effective resupply'.<sup>9</sup> Thus air power can also be dominant rather than supportive.

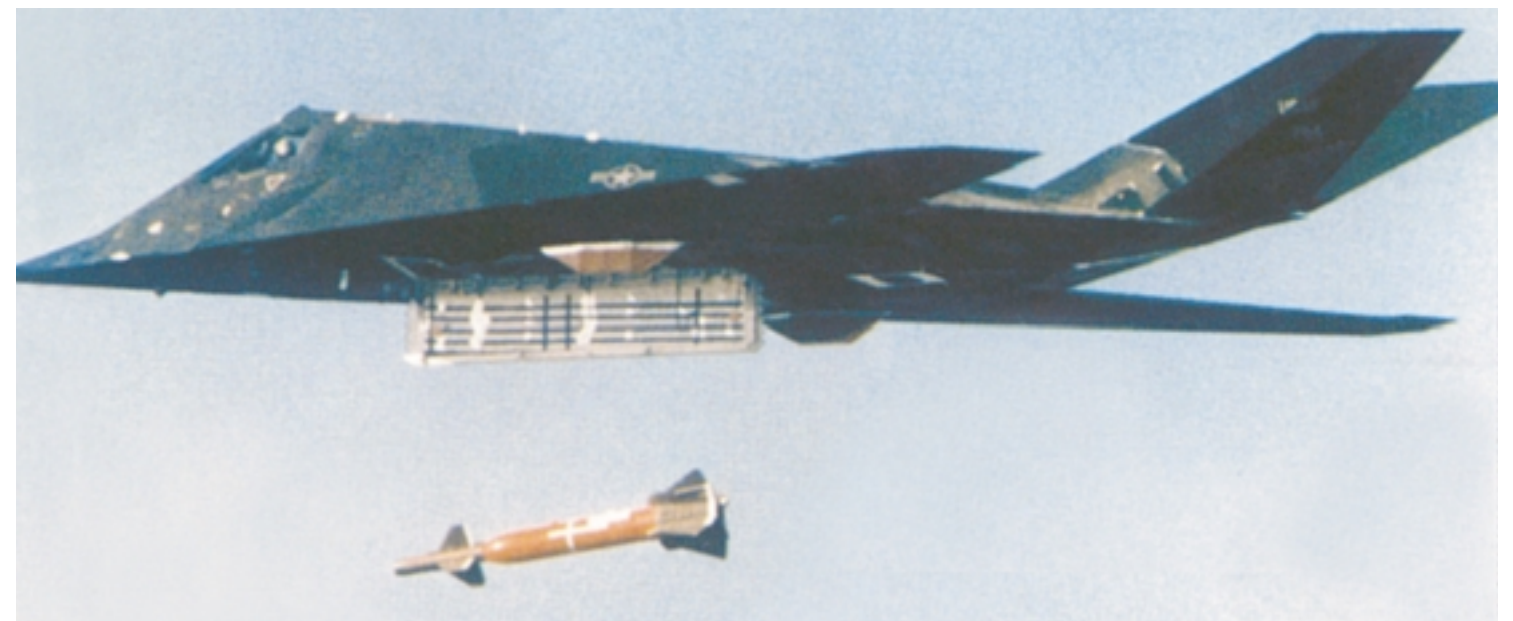
Air power's contribution in defining the battlespace can also be independent, and it is the independent aspect of operations such as strategic bombing that is often used to support assertions of decisiveness for air power. Most recently, the Kosovo air campaign brought claims that the eventual capitulation of Milosevic proved that air power alone could be decisive. Previously, a similar conclusion was drawn from the Linebacker II strategic bombing operation, which was credited with bringing the North Vietnamese back to the negotiating table. However, neither of these examples demonstrates the point convincingly. Certainly the contribution of air power to these campaigns was critically important; but were these contributions conclusive, quick and effective? The reasons for Milosevic's capitulation over Kosovo are still a mystery, but factors other than the air campaign are evident. In particular, the credible threat of a ground invasion, or the failure to gain Russia's support for Serbia could each be viewed as final, conclusive factors. Furthermore, air operations over the Balkans did not 'settle the issue' as quickly as had been expected. Operation Allied Force bombing commenced on 24 March 1999 and continued for 78 days – Gray points out that: "What had started as a short and sharp operation aimed at bending President Milosevic's will became a lengthy battle of nerves".<sup>10</sup> In Linebacker II, there is also a question over the effectiveness of the campaign. Werrell cites 2 major reasons: that there were no strategic targets in the North and that American airmen were neither adequately equipped nor tactically ready to carry out decisive non-nuclear operations. He suggests that: 'The tactical aspects, 'the victory', should not obscure the fact that strategic bombing did not achieve decisive ends in Vietnam'.<sup>11</sup> Certainly, the North Vietnamese sued for peace, but they did so in the knowledge that the US was desperate to withdraw from the conflict and with every intention of re-grouping and subsequently invading and taking over the South.

The Gulf, Kosovo and Vietnam examples of the contribution of air power to joint warfare are some of the most obvious in support of a decisive claim, yet none demonstrates all of the attributes required – quick, effective and conclusive. Other factors

come into play such that it is not possible to pick out one specific factor as decisive. In joint warfare this may always be the case. All of the forces arrayed within the battlespace will often have a contribution. Even in Kosovo, the RAF Chief of the Air Staff emphasised that: ‘Operation Allied Force was a joint operation in which navies and armies as well as air forces made their own contributions’.<sup>12</sup> Thus air power’s contribution, whether it is dominant, supportive or independent is highly situation specific, it will sometimes take a leading role, and sometimes be subordinate to other joint components. As a lesson from the Gulf War, Canan suggests that there is a potential for air operations to prove decisive: ‘Operation Desert Storm left no doubt that air power can dominate modern war and can even prove decisive if there is no need to take or hold terrain’,<sup>13</sup> but there is no evidence to suggest that this is yet the case, or ever will be.

US Joint Chiefs of Staff state: ‘... the nature of warfare in the modern era...is synonymous with joint warfare’.<sup>14</sup> Joint warfare is characterised by the multidimensional application of force involving more than one service component. Thus, in the joint arena, air, land and sea forces may all apply to some extent. Air power is a key factor, which allows non-linear battle lines to be defined and permits the use of 3 dimensions, but it is not able to claim decisiveness. The success of jointery is in recognising that land, sea and air power are co-equal and interdependent. Indeed, whether any one of these factors can claim to be, or to have become, decisive is largely irrelevant, and could even be counterproductive. Erskine contends that the danger with claims of decisiveness for any one factor is that they may lead to tunnel vision; concentrating thought on that one factor to the detriment of the big (joint) picture.<sup>15</sup> In the case of air power this tunnel vision is particularly relevant in the political context. The nature of modern operations is diverse, and the political reasons for involvement vary from deterring or reversing aggression to peace keeping or enforcing. The potential allure of air operations is that they may allow involvement without commitment (in terms of ground forces) and with minimum risk in a casualty-averse world. These notions, however, are misinterpretations that dominate political thinking and make air power the weapon of political first choice – whether it is the most appropriate employment of force to settle an issue or not. It could be argued that this was the case in Kosovo. The political desire to seek Milosevic’s withdrawal using air power alone, with the stated intent of not getting involved on the ground, rendered the

*The potential allure of air operations is that they may allow involvement without commitment (in terms of ground forces) and with minimum risk in a casualty-averse world*







*The key is in identifying the correct role for air power, and the ability to deploy it in that role whether it is supportive, dominant or independent*

initial overall threat of NATO impotent and contributed to the lengthening of the campaign. The eventual credible threat of ground force involvement can be seen as a contributory factor in Milosevic's final decision to capitulate; had this threat existed from the outset, the joint campaign may have had a decisive effect. On the other hand, the success of the NATO action depended on cohesion, which might have been threatened at the outset by suggestions of a ground offensive and without which the joint campaign may never have occurred.

In order to determine the overall contribution of air power in the joint arena, therefore, it is necessary to examine the attributes of joint warfare and air power's place within it. Drew best sums this up in his analysis of the Gulf War:

*The capabilities of modern air power and a truly three-dimensional war-fighting model may obviate the need for sequential strategies in many situations. If an enemy is vulnerable everywhere all the time, theatre commanders can choose and then orchestrate the combination of simultaneous or near-simultaneous actions that will create the greatest impact upon that enemy's ability to resist. The result should be a rapidly unfolding campaign in which there are no front lines, in which holding territory is often irrelevant (and may be a detriment), and in which air, land and sea forces are used to their greatest advantage against the most appropriate and important enemy vulnerabilities anywhere at any time.<sup>16</sup> (Emphasis added)*

Drew neatly encapsulates all the beneficial attributes of joint warfare, as well as air power's vital role in contributing to joint success. The key here is in identifying the correct role for air power, and the ability to deploy it in that role whether it is supportive, dominant or independent. This requires joint doctrine to agree the role of air power and, most critically, the correct command, control, communications and battle management infrastructure to enable it to be used to best effect. Modern public and political opinion requires that wars be conducted effectively, with minimum risk, and without waste. This can only be

achieved through co-ordinated economy of effort using a joint approach. Thus, success is dependent upon jointery and effective command and control of all the forces at the commander's disposal, with air, land and sea power working together.

As Erskine says: 'Healthy scepticism of air power's role in modern warfare is valid, and when extolling its virtues it is important not to confuse potential and capability with overall contribution'.<sup>17</sup> Air power certainly has unique strengths and the potential for them to critically affect the outcome of a joint campaign is great. However, it also has limitations, which mean that it cannot always be deployed to its greatest effect. Historically, in campaigns such as Linebacker II, and more recently in the Gulf and Kosovo, extraordinary claims about the decisiveness of air power have been made.<sup>18</sup> In these examples, however, there have been other factors involved that leave the case far from proven. To be the decisive factor, air power needs to be shown to be always quick, effective and conclusive. Whether or not air power meets any, or all, of these criteria will depend on the circumstances in which it is employed. Joint operations will shape the future of warfare and the air component is only part of a joint package that is deployed to achieve the political aims of the campaign. In joint operations air, land and sea take on supportive or dominant roles as required, and as commanded by the joint HQ. There is no need for any one factor to be decisive in all situations; it is the co-ordinated effort of the whole force package that will determine success. Indeed, to claim decisiveness for one element would be counterproductive, leading to infighting and a lack of cohesion. Air power is critically important in shaping and preparing the battlefield for surface forces, and in ensuring the success of the overall campaign. It may be indispensable, but it has not proved to be quick and effective in settling an issue on its own. The key to success in joint warfare is the correct use of air power within the context of a given campaign; the overall contribution of air power, therefore, will vary. Air power has not become the decisive factor in joint warfare – that accolade should, perhaps, be reserved for jointery itself.



## REFERENCES:

- 1 Erskine, J W. Air Power and Joint Warfare – time to reflect. *The RAF Air Power Review*, Vol 2, No 2, Summer 1998, pp127–128.
- 2 From *Airpower Journal*, Spring 1994, p7.
- 3 Bingham, P. Air Power in Desert Storm and the Need for Doctrinal Change. *Air Clues*, September 1992, p 327.
- 4 See Hallion, R P. Air Power Today and Tomorrow: A Post-Gulf War View. *RUSI Journal*, October 1994, p 27.
- 5 See Erskine, J W. Air Power and Joint Warfare – time to reflect. *The RAF Air Power Review*, Vol 2, No 2, Summer 1998, p132.
- 6 Bingham, P. Air Power in Desert Storm and the Need for Doctrinal Change. *Air Clues*, September 1992, p 327.
- 7 Sabin, Dr P A G. Air Power in Joint Warfare. In Peach, S (ed). *Perspectives on Air Power*. London: The Stationery Office 1998.
- 8 Johns, Sir Richard. Trenchard Memorial Lecture: The Trenchard Vision and its Relevance in an Age of Joint Warfare. *RUSI Journal*, October 1997, pp 13–14.
- 9 Bingham, P. Air Power in Desert Storm and the Need for Doctrinal Change. *Air Clues*, September 1992, p 326.
- 10 Gray, PW. Air Power in the Modern World. *The RAF Air Power Review*, Vol 3, No 3, Autumn 2000, p4.
- 11 Werrell, K P. Linebacker II the decisive use of air power? *Air University Review*, Vol XXXVIII No 2, January – March 1987, p59.
- 12 Johns, Sir Richard. Sir Frederick Tymms Memorial Lecture. *The RAF Air Power Review*, Vol 3, No 1, Spring 2000, p 14.
- 13 Canan, J W. Lesson Number One. *Air Force Magazine*. October 1991.
- 14 Frontispiece to *Joint Warfare of the US Armed Forces*, 11 Nov 1991, p2.
- 15 Erskine, J W. Air Power and Joint Warfare – time to reflect. *The RAF Air Power Review*, Vol 2, No 2, Summer 1998, p129.
- 16 Drew, D M. Desert Storm as a Symbol – Implications of the Air War in the Desert. *Airpower Journal*, Fall 1992, p6.
- 17 Erskine, J W. Air Power and Joint Warfare – time to reflect. *The RAF Air Power Review*, Vol 2, No 2, Summer 1998, p128.
- 18 For example Keegan, J. So the bomber got through to Milosevic after all. *Daily Telegraph*, 4 June 1999, p28.

## BIBLIOGRAPHY:

- Brookes, Wg Cdr Andrew. Air Power and the Italian Campaign, 1943–1945. *RUSI Journal*, December 1996, pp 55–61.
- Brungess, James R. *Setting the Context: Suppression of Enemy Air Defences and Joint War Fighting in an Uncertain World*. Air University Press Maxwell AFB, Alabama, June 1994.
- Dudgeon, Wg Cdr Mike. Air Power – A Key to Army Manoeuvrism. *Army Doctrine and Training News*, No 9, pp 1–2 – 1–9.
- Fedorchak, Maj Scott A. Air Operations Must be Joint. *Airpower Journal*, Spring 1995, pp 79–86.
- Hammond, Grant T. Myths of the Gulf War – Some ‘Lessons’ not to Learn. *Airpower Journal*, Fall 1998, pp 6–18.
- Kendall, Frank. Exploiting the Military Technical Revolution: A Concept for Joint Warfare. *Strategic Review*, Spring 1992, pp 23–30.
- Nason, Commodore K A. Joint Operations in the Canadian Forces: A Meaningful and Timely Start. *Canadian Defence Quarterly*, December 1994 pp 6–9.
- Skelton, Ike. Joint and Combined Operations in the Post-Cold War Era. *Military Review*, September 1993, pp 2–12.
- Mann III, Col Edward C. *Thunder and Lightning – Desert Storm and the Air Power Debates*. Air University Press Maxwell AFB, Alabama, April 1995.



Maintenance work being carried out on an RAF Search and Rescue, Sea King helicopter.





# Deception Operations & Air Power



All the business of war; and indeed all the business of life, is to endeavour to find out what you don't know from what you do; that is what I called guessing at what was at the other side of the hill.  
The Duke of Wellington <sup>1</sup>

All warfare is based on Deception

Sun Tzu <sup>2</sup>

These two quotations highlight the symbiotic nature of the relationship between intelligence, deception and the conduct of warfare. The selection of the words of Sun Tzu, in addition to being brief, highlights the all-embracing span of these concepts over time, geography and cultures. The inclusion of any one of a myriad of examples from the Bible would, arguably, extend the compass of the subject to include religion into the whole.

The trinity of deception, intelligence and the use of force is, however, not totally pervasive. There has been a segment of British history in which the acquisition of knowledge of the enemy's intention – spying – has been considered to have been positively ungentlemanly. And the whole concept of trying to trick an opponent was just not the sort of thing that could be mentioned in polite society – or even to one's troops or servants. In his comments on the role of deception in a historical context, Handel points out that societies with fixed notions of chivalry were loath to embrace these tactics in marked contrast to their less learned or enlightened opponents.<sup>3</sup> The reverse, however, was not necessarily true. Beyond the cultural dimension, military planners have often had recourse to deception operations when they have not had the overwhelming strength necessary to bludgeon their foes into submission, or to coerce them without fighting. In the Palestine Campaigns of World War I, General Allenby did not have the assets for a major confrontation with overwhelming force and therefore had recourse to 'cunning'. Deception operations have, for this reason always been part of Soviet doctrine given the length of their potential front. This remains important today in that the disciples of Soviet doctrine, such as Iraq and Serbia, still adhere to its tenets. It is worth adding, that deception operations are of more limited value in small-scale conflicts where the costs in blood and treasure are limited in proportion.





*...the advent of air power contributed to the revitalisation of intelligence capabilities with the growth of reconnaissance (visual and later photographic)*

The lessons of the Napoleonic era convinced both Jomini and Clausewitz that decisive victories could only be achieved with maximum concentration of force; deception operations therefore removed assets from where they were most needed.<sup>4</sup> Clausewitz had the following to say:

*'To prepare a sham action with sufficient thoroughness to impress an enemy requires a considerable expenditure of time and effort, and the costs increase with the scale of the deception. Normally they call for more than can be spared, and consequently so-called strategic feints rarely have the desired effect. It is dangerous, in fact, to use substantial forces over any length of time merely to create an illusion; there is always the risk that*

*nothing will be gained and that the troops deployed will not be available when they are really needed.'*<sup>5</sup>

*'The textbooks agree, of course, that we should only believe reliable intelligence, and should never cease to be suspicious, but what is the use of such feeble maxims?...Many intelligence reports in war are contradictory; even more are false, and most are uncertain.'*<sup>6</sup>

A combination of the influence of Clausewitz and Jomini, the changing nature of warfare and an unhealthy dose of chivalry left deception operations in abeyance, certainly through much of the First World War. After the initial combat of 1914, the static front line gave little scope for intelligence scoops or innovative deception operations. The need for a wire-cutting artillery barrage of several days' duration telegraphed the impending offensive; the scale of the ensuing conflict ensured that attrition was the order of the day and seemingly mutual exhaustion the likely result – at least until 1918 when it became increasingly evident that the German war machine was the more depleted.<sup>7</sup> Critically, the advent of air power contributed to the revitalisation of intelligence capabilities with the growth of reconnaissance (visual and later photographic). The corresponding need to shield one's activities from prying eyes in the third dimension led to the need for control of the air on at least a local level, and if necessary, over a designated time period. It also led to a resurrection of deception techniques, albeit at a basic tactical level with the use of camouflage techniques and decoys.

Far greater use was made of deception operations during the Second World War with Operation Fortitude as the most frequently cited example – this involved reinforcing the German perception that the Allied invasion would come to the

Pas de Calais area of France. But as Handel points out, the germs of many of the ideas and techniques were tried and tested by Wavell when he was on Allenby's staff in the Palestine Campaigns.<sup>8</sup> The strategic level deception was designed to convince the Turks that a major invasion was planned for Northern Syria in the hope that they would be duped into tying down a significant counter force. It failed when reconnaissance showed the Turks that no such force existed – as foreshadowed by Clausewitz's warning that substantial assets would be required for a worthwhile ruse. The operational level deception plan succeeded, contributing considerably to the overall success of the offensive. Allenby sought to convince the Turks that the real offensive was merely a diversionary activity; it worked, not least because it was coincident with the Turks' own assessments. Finally, at the tactical level, techniques that were to become the stuff of legend in World War II (including 'the man that never was') were first used. These featured such ploys as the loss of 'haversacks' containing vital plans and the like. From the air power perspective, General Wavell's own commentary sets the scene for the development of intelligence gathering, deception operations and air warfare of later generations:

*'All these devices to mislead the enemy would have been of much less avail had not the new squadrons and more modern machines received from home enabled our Air Force in the late autumn to wrest from the enemy the command of the air which he had enjoyed for so long in the theatre. After a few trials of strength had convinced the German aviators of the superior speed and performance of the Bristol Fighters, they came over only at a very respectful height, and by the beginning of the operations had been almost driven out of the skies.'*<sup>9</sup>

Wavell went on to say in respect of a later offensive:

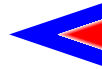
*'But it was above all the dominance secured by our Air Force that enabled the concentration to be concealed. So complete was the mastery it had obtained in the air by hard fighting that by September a hostile aeroplane rarely crossed our lines at all.'*<sup>10</sup>

This brief introduction has set the scene from a historical perspective taking the First World War as something of a watershed in the parallel, but connected, developments of the formalisation of the intelligence processes,<sup>11</sup> the resurrection of deception operations and the advent of air power. The article will go on to look more closely at the acquisition and absorption of intelligence material and then the formulation of deception operations. The paper will then examine practical aspects of planning, commanding and controlling the process. The importance of air power – or more correctly in the 21st Century – **aerospace power** will be seen to run as a common theme throughout the discussion.

## INTELLIGENCE

The simplicity of a single word sub-heading belies the complexity of the morass of conflicting definitions as to what intelligence is, how it is gathered and what use can be made of it (not least where some material is so highly classified that few can read it and even fewer refer to it in planning). *The Concise Oxford Dictionary* defines intelligence, inter alia, as being 'information, news





especially of military value'. Academic sources immediately refine these terms with information being the material – both secret and open – that is gathered, arrives unbidden, or is merely there in the mass of 'stuff' that can be tapped from a wide variety of sources. The raft of open source academic material, media articles and the advent of the Internet have expanded the potential gold mine in which the nugget hunter can search. This vast array of information can be termed 'source material' or the raw material of intelligence'.<sup>12</sup> Material from the range of sources only becomes **intelligence** after it has been consciously sifted for relevance, accuracy, consistency, timeliness and value. This variety of sources can be problematical because human nature is such that secret information that is available to an exclusive few can appear to be of more importance than what is open to all – especially when the relative quantities are taken into consideration by harassed staff with limited capacity and time available. Irrespective of the sources chosen, the actual selection of specific material by the intelligence analysts therefore vests it with its own special endorsement. The classification of the whole, and its subsequent use and distribution, will be based in part on the highest level of source protection needed (ULTRA in the Second World War as a classic example), and also on the value inferred by its selection and by staff comment that is added. The fact that this intelligence (i.e. sifted source material) may often form the basis for the formulation of government policy, high level military planning or merely simple tactical action emphasises the potential importance of the process itself even though the original material may have all been open source.

The potential deception operations planner (or deceiver in simple garb) must therefore have an accurate appreciation of how his target receives source material; how it is prioritised (some analysts, for example, have an aversion to signals intelligence in favour of human intelligence, many shun open sources); with what material it is cross-referred for consistency; and how the analysis is distilled and distributed to planners and decision makers. The deceiver would also, ideally, wish to know the bias, sympathies or persuasion of the members of the analytical team in order to assess any likely spin.<sup>13</sup> It is obviously difficult to make more than sweeping generalisations in this area, but diplomats, for example, tend somewhat naturally to eschew secret reporting in favour of information gleaned through the normal diplomatic channels. Likewise, the military arm of the intelligence community tends to favour technical means of acquiring raw material. The deceiver would also wish to know how the decision makers and planners view the intelligence community of his target organisation (it need not be a state). British attempts to deceive the Japanese in World War II failed, not because of a poorly thought out plan, but because the Japanese senior military leadership held their intelligence system in such low esteem that the advice based on the deception was simply ignored – along with the rest of their product.<sup>14</sup> A more common trait, especially (but not exclusively) among less democratic regimes, is for the senior leadership to ignore any advice, analysis or assessment that does not accord with their prejudices or pre-conceived notions. Hitler's unwillingness to listen to possibly contradictory advice is well documented; indeed his conviction that the Allied landings would take place in the Pas de Calais area contributed considerably to the success of Operation Fortitude – contrary to the thinking of close associates such as Speer.<sup>15</sup> This can be exacerbated by ideological preconceptions. Wegner makes this point in respect of German attitudes to Soviet Russia prior to Hitler's decision in Summer 1940 to invade Russia.



*British attempts to deceive the Japanese in World War II failed, not because of a poorly thought out plan, but because the Japanese senior military leadership held their intelligence system in such low esteem that the advice based on the deception was simply ignored...*

## DECEPTION

Again at the simplest level, the Concise Oxford Dictionary defines the act of deceiving as the process of making someone believe what is false, by misleading purposefully; deceit is a dishonest trick or stratagem. In a more contextual format, Handel defines deception as a ‘purposeful attempt by the deceiver to manipulate the target’s decision makers in order to gain a competitive advantage’.<sup>18</sup> At first sight, it must appear somewhat obvious that deception has considerable potential as a force multiplier. Furthermore, if care is given not to over-invest men and materiel in the process as suggested by Clausewitz (note 5 refers), it is almost cost free. As intimated earlier, however, the very dishonesty of the process has not been without its critics.

Sparse intelligence material allied with the misconception that Russia was a ‘tottering giant’ unable to ‘shake off the yoke of the Jew’ inevitably resulted in erroneous assessments of the likely resistance.<sup>16</sup> This inability to view a problem through the eyes of enemy will almost certainly make a bad situation worse by clouding issues with one’s own perceptions. American tendencies to apply their own national value sets to Vietnam resulted in many examples of poorly applied targeting.<sup>17</sup>

An intelligence process cluttered by prejudice (ideological and possibly racial or religious), stubbornness, and bigotry is doomed to a problematic future – at best. It also offers the deceiver considerable room to manoeuvre, provided – and this is a huge caveat – that his own intelligence apparatus is sufficiently capable, and has enough resolution, to be able to identify the strengths and weaknesses of the enemy system. This becomes absolutely vital when the deceiver is building his deception plan with its essential feedback loops covering target reaction to the bait. The Allies’ ability to monitor German traffic through the ULTRA decrypts was an important factor in following the deception process during Operation Fortitude. It is, however, important to stress that extremely high-grade material such as that available through ULTRA – or in the modern context, satellite imagery – must not be allowed to cloud the judgements of the analysts or the deceivers. At the end of the day, the deception plan works through its impact on the minds of the enemy analysts, planners and decision makers.



The realities of campaigns, however, where assets are at premium encourage the leader to join cunning and daring. In one of his few significant references to deception, Clausewitz goes on to say:

*'However, the weaker the forces that are at the disposal of the supreme commander, the more appealing the use of cunning becomes... The bleaker the situation, with everything concentrating on a single desperate attempt, the more readily cunning is joined to daring.'*<sup>19</sup>

It could very easily be argued that the mind set prevalent in the United Kingdom during the Second World War was such that the would be deceiver stood a very reasonable chance of his plans being utilised in either the desert campaign or Overlord. The awareness that the British (and Commonwealth) army was effectively a single shot weapon must have concentrated Montgomery's mind. The same must also have been true in the lead up to the Gulf War where the limitations on men and materiel were hugely compounded by the fragility of the coalition.

Whilst Clausewitz does not wax lyrical on the subject of deception, his words still have some resonance even now. Warfare in the 21st Century has matured to the point where limits in assets available coupled with aversion to casualties – whether they be friend or foe – is such that deception must be an integral part of any campaign. The tenets of the manoeuvrist approach to warfare, in which the aim is to shatter the enemy's overall cohesion and will again make deception operations fundamental to any campaign.<sup>20</sup> Within this campaign it is axiomatic that the air power characteristics of reach, speed of response, ubiquity and flexibility will, almost certainly, form a significant part of the plan as they are inherently manoeuvrist in nature.<sup>21</sup> Critics of air power have long argued that its impermanence is a significant disadvantage. Modern warfare with a political reluctance for long-term commitments is such that this reduced footprint has become a significant virtue – in its own right.<sup>22</sup> Furthermore the



evident virtues of air power make it a superb tool in the hands of the potential deception operations planner. The flexibility of response, lack of footprint and speed of utilisation become hugely flexible attributes, considerably increasing the range of available options. The Joint Force Air Component Commander (JFACC) will therefore be a major contributor to the deception elements of the plan.

*It could very easily be argued that the mind set prevalent in the United Kingdom during the Second World War was such that the would be deceiver stood a very reasonable chance of his plans being utilised in either the desert campaign or Overlord*

Deception planning can take a number of formats and the campaign planning team may decide to use one, or a selection, of these options. Integral to this is a sound understanding of the enemy intelligence organisation and the decision-making structure that it supports. The fault lines therein can then be exploited. In compiling the deception plan, as an integral part of the whole enterprise (and not a later add-on), the campaign planners must decide what **effect** they wish to have on their foe. The deception may be designed to divert enemy attention leading to misplaced effort on his behalf. The prevention of concentration of forces to oppose the Normandy landings is a classic example of this at the operational level. Similar stratagems were used nightly by Bomber Command (and the USAAF VIIIth Air Force) in their raids on Germany with diversionary tactics designed to lure night fighters away from main target areas.

The counter effect to this was again used in the Bomber Offensives by both sides. The effect desired is to dissipate the enemy effort by the use of decoys. During the Luftwaffe night raids, Battle of Britain airfields were darkened and diversionary fires lit some distance away. Similar tactics were used to deceive Bomber Command later in the War. The development of radar brought with it a whole new range of deception measures including Window (Chaff) and active jamming.<sup>23</sup> Modern extensions of this include the sacrifice of cheap and easily replaceable unmanned air vehicles (UAVs) both to cause an enemy to expend ready load surface to air missiles prior to a main raid, or to exhaust stocks; the evident risks in such ploys highlight the vital interaction between intelligence staffs and deception planners. Likewise, luring an enemy into firing expensive precision weaponry at decoys can be an extremely cost effective counter (as the coalition found to its cost during Allied Force). A level of sophistication up from this is the use of a drone aircraft to alert an enemy air defence system thereby triggering radar emissions that can be collected by the friendly electronic reconnaissance system. A further area of deception in this field would be to cause an enemy to research and develop a counter to a fictional terror weapon. The efforts expended by the Allies to counter the V Weapons (Operation Crossbow) and the on-going United States anti-ballistic missile ventures illustrate the potential in this field. While it may be argued that a ‘spoof’ on this scale would be hard to perpetrate, particularly in western democracies, the realities of the American so-called black programmes coupled with the voracious appetite of the media for such material, leave it a real possibility. The potential to overstretch a whole enemy Research and Development programme, and even their economic well-being, at the strategic level is considerable.



*While it may be argued that a ‘spoof’ would be hard to perpetrate, particularly in western democracies, the realities of the American so-called black programmes coupled with the voracious appetite of the media for such material, leave it a real possibility...*



The third effect that deception operations can achieve is complementary to the laws of war and that is to achieve surprise. This requires friendly strength, capability and, most importantly, intentions to be masked. The use of high speed, low level aircraft is an immediate method by which this could be achieved, especially if done in radio (and electronic emissions) silence. These missions allied with cruise missile attacks against high value targets with little or no notice would be a useful combination in a campaign plan designed around a manoeuvrist approach – shattering will and cohesion. An extension to this would be the use of an unpredictable asymmetric approach in which the nature, or extreme violence of the attack, achieved overwhelming surprise. This can obviously be played by both sides. Concerns over future warfare are often centred on the potential of such attacks, almost irrespective of their likelihood.<sup>24</sup>

As indicated above, the deception operations planning staff, still in concert with the intelligence staffs and the operational team, must attempt to envisage potential options through the eyes of the enemy. Having determined the effect to be achieved, the

*The American efforts to preserve the secrecy of stealth technology, to the extent with the B2 of only operating from Continental US is indicative of the lengths to which some forces may have to go*



planners can look at the specific areas to analyse how this effect can be achieved. The first of these is strength of friendly forces. This can either be exaggerated or concealed.<sup>25</sup> Human nature is such that decision makers and planners prefer to deal with quantifiable issues; they are happier with numbers of men, divisions, tanks, aircraft and ships. This is evident in planning terms where arcane symbology creeps over terrain maps with little regard for capability. It is equally identifiable in the aftermath of an engagement where success is measured in terms of body bags or tanks plinked with little allowance for the overall effect achieved. There is therefore considerable scope for the deceiver to influence significantly enemy perceptions over strength. The size of friendly units can, for example, be exaggerated by generating extra radio or signals traffic or concealed by the imposition of radio silence. Aerial or satellite reconnaissance can be allowed over some areas, or actively prevented over others.<sup>26</sup> Decoys and camouflage are again equally useful.

The deceiver may also seek to dupe his foe as to the capability of his forces, and again this can be via exaggeration or concealment. The American efforts to preserve the secrecy of stealth technology, to the extent with the B2 of only operating from Continental US is indicative of the lengths to which some forces may have to go. At first sight, this may seem merely to be a normal question of security; rather it highlights the intrinsic nature of deception operations to all military activity. Capability can be masked through the use of so-called black programmes, or through care in what is released into the public domain. Again this encompasses normal security procedures, but the effect on a putative enemy can be enhanced by concealing a specific characteristic that may have strategic or manoeuvrist impact. The 617 Squadron dams raid is an example of this potential.

Capability is also relevant at the next level up in that the deceiver may seek either to mask, or exaggerate, just what his formations are capable of achieving. Morale, training, rehearsal, equipment, tactics and all arms co-ordination are all factors that can be considered under this heading. Again, what may appear to be obvious, especially in terms of concealment, merely serves to highlight how much this thinking should be second nature and therefore part of every campaign plan. The synergy that may result from well conducted joint and combined operations, or the scope for an utter shambles, are areas that could be exploited.

The next opportunity for deception operations is arguably the most contentious as it encompasses the most risky and yet potentially the most rewarding. This covers the area of **intentions** and can range from relatively simple matters such as the timing of an attack, the axis of advance through the likely targets, the effects sought and so forth. At the end of the spectrum, there is scope for the achievement of strategic effect with coercion of the enemy without recourse to combat. The concept of using air power as an instrument of coercion is immediately attractive in its simplicity; the flexibility, reach and versatility of air delivered weapons offer the policy maker a universal remedy – the ultimate panacea. A massive air presence with evident air supremacy, ample precision weaponry and the scope for an overwhelming bombardment illustrate the immediate potential in this arena.

The literature on the theory of coercion is extensive and it is beyond the scope of this article to do more than touch on key tenets and highlight the ferocity of the debate. It is, however, worth emphasising that in campaign planning terms, there is considerable overlap between coercion and deception. Yet there is also an evident demarcation between the two. What is important is that both deal with behaviour, perceptions and psychology. This requires a sophisticated interface with the intelligence analysts and must be part of the whole campaign plan.

The *Concise Oxford Dictionary* offers us the following definition of coercion: ‘to persuade or restrain (an unwilling person) by force’. Yet Professor Freedman cites the *Oxford English Dictionary*, presumably with approval, as defining coercion as ‘the application of force to control the action of a voluntary agent’.<sup>27</sup> Freedman goes on to highlight the tension between control and the voluntary status of the victim. This accords with the tension between the two definitions. The degree of willingness to change of the object of our attentions is therefore at the heart of the debate. Inevitably, it is hard to measure, difficult to achieve and therefore all the more desirable if strategic or operational goals are to be reached. It is axiomatic in this that willingness to alter behaviour is heavily dependent on perceptions and psychology.

*...Alexander George examined the theory of coercive diplomacy with the latter in particular concentrating on why the USAF bombing of North Vietnam was not producing the expected results*





*If the enemy is denied the use of his means of waging war, he will inevitably be required to amend his behaviour – either by surrender, negotiation or resort to asymmetric means*

In the mid-60s, the work of Tom Schelling<sup>28</sup> and Alexander George<sup>29</sup> examined the theory of coercive diplomacy with the latter in particular concentrating on why the USAF bombing of North Vietnam was not producing the expected results. These studies have provided the cornerstone of work in the field. This has been followed more recently by Professor Freedman's collection of cases<sup>30</sup> as well as relevant papers by, inter alia, Professor Mike Clarke<sup>31</sup> (co-panellist) and Group Captain Andrew Lambert.<sup>32</sup> Also of immediate interest is Robert A Pape's treatise entitled *Bombing to Win – Air Power and Coercion in War*;<sup>33</sup> this work is sufficiently controversial to have been considered worthy of formal challenge in a volume shortly to be published by Cass. Pape's central conclusions are, nevertheless, worthy of note. He contends that the use of air power as a means of punishment does not work at a conventional level because modern nation states have high pain thresholds.<sup>34</sup> This has been shown to be true during the Second World War, in Vietnam, Iraq and most recently in Serbia.<sup>35</sup> Furthermore Pape suggests that air power will not succeed as a means of decapitation even in the narrow sense of severing strategic command and control. Rather he postulates that the desired end result is best achieved by attacking – or denying use of – enemy fielded forces and operational level command and control.<sup>36</sup>

This provides a relatively straightforward military approach to a military problem. If the enemy is denied the use of his means of waging war, he will inevitably be required to amend his behaviour – either by surrender, negotiation or resort to asymmetric means. Coercive use of military force on the other hand, which is more in concert with the tenets of manoeuvre warfare, requires either a tacit agreement between the two sides or at least some form of psychological pressure. To this end, the use of military force whether it be nuclear or conventional, air power, maritime or land are towards one of the spectrum that starts with routine diplomacy. Implicit within this is that the bigger the stick that a given nation, or collection thereof, wields the more convincing its posture becomes as the scenario degenerates into coercive diplomacy and thence into the use of force. But as James Gow points out in the context of Bosnia, although air power as a coercive tool may well be the 'most forceful and penetrating means of coercion' it does require an overall coherence of approach at all levels.<sup>37</sup>

Exposure to this debate is critically important for the campaign planners whether they be would-be deceivers, coercers, intelligence analysts or operational planners. Although not specifically mentioned hitherto, it is equally vital that the information operations planners and the media operations team are either part of the whole, or at the very least, the key personnel in all areas have sight of the whole. Furthermore, the scope for manipulating the media as unwitting tools in deception operations has long gone with the range of conflict, the level of analysis prevalent in the research teams and the relatively low level of 'national interest' involved. If the Joint Task Force Commander permits parallel activity, the result will, in the horrid but sadly appropriate modern jargon, be anti-synergistic.

## COUNTERING DECEPTION

At face value, the immediate counter to deception is to be aware of the scope for such action. At the heart of matter is an understanding of the enemy or target psychology and mind set. The ability to see things from the enemy perspective is paramount. This can be particularly difficult if one is not aware, either in peace or the asymmetric situation, that a given group, organisation or state is a potential deceiver.

From an organisational perspective, the intelligence and operational planning community, up to and including the most senior decision makers and, where appropriate the interface between them and the political level, must be aware of its own fault lines. This can best be achieved through audit and red/blue war-gaming. More importantly, the culture of the organisation must encourage an active willingness to challenge orthodoxy, to seek ‘out of the box’ ideas and to challenge vested interests – in essence to speak bluntly where it is least welcome. This culture of analysis, challenge and free thought may then have the flexibility to spot, for example, where an intelligence picture is almost too perfect, or fits together too well.<sup>38</sup>

Deception can also be countered by improving friendly knowledge of enemy strength, capabilities and where possible, intentions – Wellington’s opening words for this article bear repetition: ‘endeavour to find out what you don’t know from what you do; that is what I called guessing at what was at the other side of the hill’. Wavell’s early experience of air power is even more apposite today with sophisticated satellite and aerial reconnaissance, AWACS, JSTARS, Astor and equivalent platforms. The increase in the scope for network centric warfare increases the potential for information to be shared across the battlespace thereby reducing the possibility of deception.<sup>39</sup>



Closely allied to countering deception is the possibility of failure. This can occur where the enemy fails to spot the bait that has been offered to him. The resolution of his gathering system may not be adequate or what may appear blindingly obvious to the deceiver has no visibility at all to the target. The bait may be spotted but deemed to be below threshold levels and ignored. Alternatively the enemy may avoid the potential ruse through identification of it as such. This can be potentially damaging as it could be turned to his advantage. There is also considerable danger in the enemy reacting to one element of

*Wavell’s early experience of air power is even more apposite today with sophisticated satellite and aerial reconnaissance, AWACS, JSTARS, Astor and equivalent platforms*



the deception and unravelling the whole by surprise action. The use of allied air platforms would hopefully be alert to such a possibility.

This article has stressed the importance of deceptions operations being an integral part of the campaign planning process from the outset. They should be considered to be an add-on or an additional extra. Allenby's successes and those evident from Fortitude show the potential bonuses of getting this right, making the whole concept essential. The interaction of intelligence, warfighting, deception and information operations is absolutely vital; the respective planners must be co-located and aware of each others' capabilities and intentions throughout the process. Given that air power can have such a profound influence in each of these fields, it is essential that not only is JFACC co-located, but is also an integral member of the planning team.

Deception (and information) operations, especially where they overlap with coercion, are inherently about perceptions, behaviour and psychology. It is therefore difficult to predict the outcome of these operations and imprecise to measure the results later. These factors, however, should not preclude the use of these potentially war winning measures. The fact that they can be a force-multiplier should make these operations an essential option to every Joint Force Commander in an era when men and *materiel* are perpetually in short supply. The true impact can only be realised, however, if the planning staff are completely open minded about the process, are aware of the precedents and the pitfalls and have the ability to see events through the eyes of the foe – on an ongoing basis. If these preconditions are not met, the irony of the Codeword used to protect Overlord planning – BIGOT – may well be realised.

## NOTES

- 1 Cited in AP3000, *British Air Power Doctrine*, 3rd edition, HMSO, London 1999, page 2.4.1, as the head note to Chapter 4 entitled 'Information Exploitation'. This secondary source has been cited deliberately to highlight the contemporary doctrinal use of the quotation.
- 2 Sun Tzu, *The Art of War (With a forward and translated by James Clavell)*, Hodder and Stoughton, London, 1981, Chapter 1 (Laying Plans), page 17. Sun Tzu's rather ruthless approach to the use of spies would not be to contemporary taste (outside conspiracy theories) as they frequently involved execution of ones own people – see Book XIII.
- 3 For a detailed discourse on the role of deception in history see Michael I Handel, 'Introduction: Strategic and Operational Deception in Historical Perspective', *Intelligence and National Security*, Vol 2, No 3, July 1987, page 2 *et seq.* See also Chapter 1 of Jon Latimer, *Deception in War*, John Murray, London, 2001. The reference to outdated notions of chivalry stems from the trial of Penguin Books over their publication of *Lady Chatterley's Lover*; the trial judge invited the jury – in October 1960 – as to whether this was the sort of book that they would give to their servants to read.

For an authoritative account of intelligence operations during the Second World War, see

F H Hinsley, *British Intelligence in the Second World War (Abridged Version)*, HMSO, London, 1993. For deception operations, see Michael Howard, *Strategic Deception in the Second World War*, Pimlico, London, 1992.

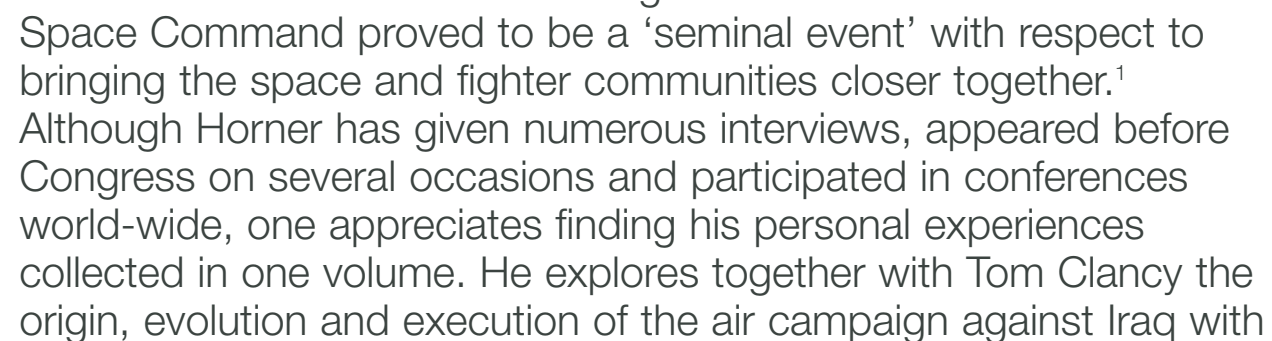
- 4 Handel, 'Introduction: Strategic and Operational Deception in Historical Perspective', page 5. See also John Ferris and Michael I Handel, 'Clausewitz, Intelligence, Uncertainty and the Art of Command in Military Operations', *Intelligence and National Security*, Vol 10, No 1 January 1995, pages 1 & 2. Ferris and Handel add the clear health warning that what was applicable to a Clausewitzian era may not be as relevant to our own period. Arguably, this is true about many selective uses of the quotations of the strategists.
- 5 Clausewitz's original comments on deception and intelligence respectively are taken from Carl von Clausewitz, *On War*, Edited and translated by Michael Howard and Peter Paret, Princeton University Press, NJ, 1976. Book 3, Chapter 10, 'Cunning', page 203.
- 6 Clausewitz, Book 1, Chapter 6, 'Intelligence in War', page 117.
- 7 See John Terraine, *To Win a War, 1918 the Year of Victory*, Cassell, London 1978.
- 8 Handel, 'Introduction: Strategic and Operational Deception in Historical Perspective', page 6.



- 9 Colonel A P Wavell CMG MC, *The Palestine Campaigns*, Constable, London, 1928, pages 107 – 108.
- 10 Wavell, *ibid*, page 201.
- 11 See Christopher Andrew, 'Secret Intelligence and British Foreign Policy 1900 – 1939', in Christopher Andrew and Jeremy Noakes (Eds), *Intelligence and International Relations 1900-1945*, Exeter University Publications, Exeter, 1987. Hitherto Sloops of war had crept into Napoleons anchorages and Frigates had been the eyes of the Fleet. Spying was only indulged in by the unscrupulous few with means so to do.
- 12 See Edward Thomas, 'The Evolution of the JIC System up to and During World War II', in Christopher Andrew and Jeremy Noakes (Eds), *Intelligence and International Relations 1900-1945*, page 219.
- 13 A classic example of this occurred in the lead-up the Falklands War; the Franks Report into the origins and ensuing intelligence failures highlighted the proclivity of the Joint Intelligence Committee (JIC) to frame its theoretically neutral assessments so that they were in line with Foreign Office Policy. Until the Open Government initiative of John Major in 1994, the whole JIC process was shrouded in secrecy; the details of how the process works is now public knowledge and is even subject to a degree of Parliamentary oversight. *Falkland Islands Review: Report of a committee of Privy Counsellors. Chairman Rt Hon Lord Franks*, CMD8787, HMSO, 1983.
- 14 See J W M Chapman, 'Japanese Intelligence 1918-1945: A Suitable Case for Treatment', in Christopher Andrew and Jeremy Noakes (Eds), *Intelligence and International Relations 1900-1945*, Exeter University Publications, Exeter, 1987, especially page 172.
- 15 Cited in Ralph Bennett, *Behind the Battle, Intelligence in the War with Germany, 1939 – 1945*, Pimlico, London, 1999, page 260-261.
- 16 Bernd Wegner, 'The Tottering Giant: German Perceptions of Soviet Military Strength in Preparation for 'Operation Blau' (1942), in Christopher Andrew and Jeremy Noakes (Eds), *Intelligence and International Relations 1900-1945*, Exeter University Publications, Exeter, 1987, page 295.
- 17 Mark Clodfelter, *The Limits of Air Power, the American Bombing of North Vietnam*, Free Press, New York, page 164.
- 18 Michael I Handel, *War, Strategy and Intelligence*, Frank Cass, London, 1989, page 310.
- 19 Clausewitz, *On War*, page 203.
- 20 *British Defence Doctrine*, JWP 0-01, 4.8 – 4.9. HMSO, London, 1996.
- 21 *AP 3000, British Air Power Doctrine*, 1.2.13.
- 22 See, for example, James Gow, *Triumph of the Lack of Will, International Diplomacy and the Yugoslav War*, Columbia University Press, New York, page 165.
- 23 Latimer, *Deception in War*, Chapter 8.
- 24 For a comprehensive discussion on this field see Professor Philip Sabin, 'Air Strategy and the Underdog', in Peter W Gray, *Air Power 21, Challenges for the New Century*, HMSO, London, 2000, Chapter 4.
- 25 For a detailed 'typography of deception' see Handel, *War, Strategy and Intelligence*, page 315. This has been extended for the purposes of this paper with an emphasis on air power throughout the examples.
- 26 Latimer, *Deception in War*, page 229.
- 27 Lawrence Freedman (Ed), *Strategic Coercion – Concepts and Cases*, Oxford University Press, Oxford, 1998, page 15.
- 28 Thomas Schelling, *Arms and Influence*, Yale University Press, New Haven, 1966.
- 29 Alexander L. George and William E Simons (Eds), *The Limits of Coercive Diplomacy*, Westview Press, Boulder, Colorado, 1994. Alexander's work was started in 1965.
- 30 Freedman, *ibid*.
- 31 Professor Michael Clarke, 'Air Power, Force and Coercion', in *The Dynamics of Air Power*, Ed Group Captain Andrew Lambert and Arthur C Williamson, RAF Staff College Bracknell, 1996.
- 32 Group Captain A P N Lambert, *The Psychology of Air Power*, RUSI Whitehall Paper No 30, 1994.
- 33 Robert A Pape, *Bombing to Win – Air Power and Coercion in War*, Cornell University Press, Ithaca, 1996.
- 34 Pape, *ibid*, page 316.
- 35 Peter W Gray, 'Air Operations for Strategic Effect – theory and practice in Kosovo', *RAF Air Power Review*, Vol 3 No 1, Spring 2000, page 21.
- 36 Pape, *ibid*, page 56.
- 37 James Gow, *Triumph of the Lack of Will, International Diplomacy and the Yugoslav War*, Columbia University Press, New York, 1997, pages 8 & 40.
- 38 Handel, *War, Strategy and Intelligence*, page 341.
- 39 See David S Alberts, John J Garstka, Frederick. P Stein, *Network Centric Warfare, Developing and Leveraging Information Superiority*, CCRP Washington DC, 1999.



***Tom Clancy with General Chuck Horner (Ret.)***



General Charles Albert Horner embodies a considerable amount of air power history. He was awarded pilot wings in 1959, spent two tours flying combat missions in Vietnam, was in charge of the American-led air campaign in Operation Desert Storm and ended his military career as commander-in-chief of the unified U.S. Space Command (CINCSpace) in 1994. He was consequently in charge of perhaps the most successful air campaign ever fought, and according to Benjamin S. Lambeth his

assignment as commander of the

Space Command proved to be a 'seminal event' with respect to bringing the space and fighter communities closer together.<sup>1</sup> Although Horner has given numerous interviews, appeared before Congress on several occasions and participated in conferences world-wide, one appreciates finding his personal experiences collected in one volume. He explores together with Tom Clancy the origin, evolution and execution of the air campaign against Iraq with

## THE LEGACY OF VIETNAM

The Vietnam War remains a distressing memory for Chuck Horner, and in 'The Big Lie' he provides severe criticism of the operations in which he participated. He argues that the Washington administration did not have a clear objective of what it wanted to achieve with air power, and that the chosen Graduated Pressure strategy essentially asked the military to fight with its hands tied. The pilots were given politically selected targets, the rules of engagement prevented them from hitting the enemy where it hurt, they were not allowed to take initiatives on their own, and combined with target exclusion zones air power was prohibited from being used in an effective manner. Numbers of sorties and bombs dropped were hopeless measures of merit and the critical airfields north of Hanoi were off-limit for political reasons, thereby allowing MiGs and critical surface-to-air missile (SAM) sites sanctuaries. Although Horner accepts that there are always legitimate higher priorities than your master air campaign plan, and that the military strategy had to be devised in order not to provoke the Soviet Union and China into war, he argues that it was mere stupidity not to attack the SA-2s that were overtly brought in by train from China and ships from the Soviet Union. The Americans were not allowed to attack SA-2s that were being set up, or MiGs that prepared for take-off, unless they were fired at first. Horner also faults the generals for having conducted the war inadequately and for not having stood up to their political masters. On the lower levels of war he argues that there were unhealthy rivalries between





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# book reviews

In order to understand the dispute one must realise that at the time Horner was faced with 27 Iraqi divisions on the Kuwaiti border of Saudi Arabia and without any ground forces in defence. The stated mission was to defend Saudi Arabia and Horner's major concern was to develop a defensive air campaign plan that could deal with the imminent Iraqi threat. Warden, for his part, believed that if they went directly for key targets in Baghdad the Iraqi ground forces would prove irrelevant. Horner found Warden one-dimensional in his focus on leadership targets in Baghdad and did not find that he could rely on an offensive air campaign alone in coercing the Iraqi leadership to withdraw from Kuwait. Moreover, Horner found that opening the air campaign with a substantial attack on a major Arab capital without having fully tested the new technology of stealth and precision was partly a gamble, because if the precision-guided missiles did not perform well it could jeopardise American-Arab



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# reviews

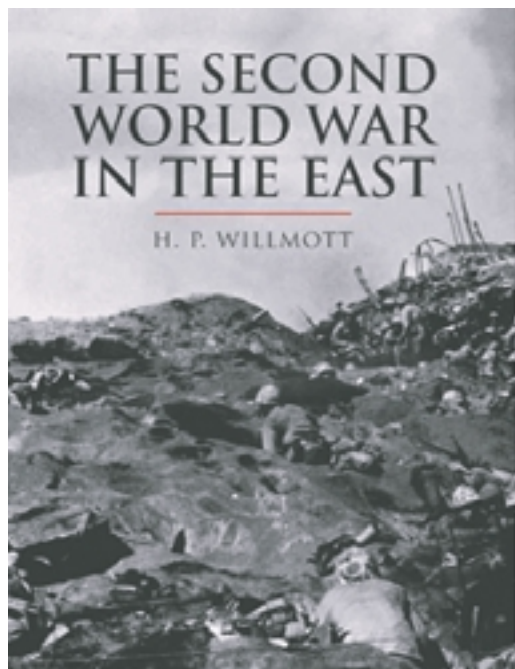




- 6 Lieutenant General Charles A. Horner, interview with Lieutenant Colonels Suzanne Gehri and Richard Reynolds, 'The Desert Story Collection', 2 December 1991, p. 6.
- 7 Richard P. Hallion, correspondence with author, 23 February 2001.
- 8 See also Tom Clancy, *Fighter Wing: A Guided Tour of an Air Force Combat Wing*, (New York: Berkley Books, 1995), pp. 35-60.
- 9 For an account arguing that strategic bombing does not work, see for example Robert A. Pape, *Bombing to Win: Air Power and Coercion in War*, (Ithaca: Cornell University Press, 1996).
- 10 Tom Clancy with General Chuck Horner, *Every Man a Tiger*, p. 374.
- 11 Captain John Andreas Olsen, 'Operation Desert Storm: An Examination of the Strategic Air Campaign', Ph.D. submitted to De Montfort University, March 2000.
- 12 Interview with Jamie Allen, CNN Interactive Senior Writer, 'Tom Clancy, General Chuck Horner return to Desert Storm',  
[www.cnn.com/books/news/9905/12/clancy.horner/~hsindex.html](http://www.cnn.com/books/news/9905/12/clancy.horner/~hsindex.html)



**H.P. WILLMOTT**



On 7 December 1941, after an exhausting war against the Chinese which they could not bring to final victory, the Japanese bombed Pearl Harbour and thus initiated a war in which ultimately they found themselves fighting the world's most populous state (China), the greatest empire (Great Britain), the most powerful single state (United States) and the strongest military power (Russia). Dr. H. P. Willmott, the author of *The Great Crusade*, which Sir Michael Howard referred to as 'the best single volume history of the Second World War ever written', explains the

success and failure of the Japanese armed forces in their quest for Pacific hegemony in *The Second World War in the East*. The author attempts to explain rather than describe the genesis and the course of war, and in that process he is faced with a paradox: 'there are few things more difficult to explain than inevitable defeat'. While the Germans had some chance of victory in the West, there was no way the Japanese could ever have prevailed in the East.

History is seldom kind to the vanquished, and this book is no different: the author systematically and comprehensively explains 'Why the Japanese Lost'. The explanation is found in the social, economic, military and political circumstances of the time, combined

with traditional Japanese mentality. In brief, the Japanese political system represented an incoherent decision making process, which by the 1930s had been reduced to a position of *minor inter pares* relative to the army and the navy. The armed forces, for their part, did not co-ordinate their strategic efforts in the conduct of war, and consequently, beyond the perimeter defence concept, Japan went to war without a strategic policy. 'The Imperial Navy had a doctrine, geared to fighting and winning one battle: it was a doctrine of battle that masqueraded as a plan of campaign, and the plan of campaign was a substitute for strategy'. The Japanese could only fight the battles they planned to win and could only win the battles they planned to fight, but the battles they had to fight were not the ones that they could win. Japan thought it could set the terms of reference, and moreover, the nation that had never witnessed military defeat could simply not imagine anything but success.

From Midway via Leyte Gulf, to Iwo Jima, Okinawa and the devastating strategic bombing campaign, the author guides the reader on the road to Japan's defeat, failure and collapse. In the process, strategic, operational and tactical considerations are tied into a comprehensive story of high analytical standard. The author differentiates between the nature of war and the conduct of war on the one hand, and the difference between a battle, a campaign and a war on the other. Moreover, the reader gets valuable insight into strategy, doctrine and military theory, and as attention is given to the air, naval and army dimension of warfare it amounts to a coherent whole. The book has useful illustrations and the appendices provide a unique encyclopaedic basis for further research. Although the author will surely be criticised for some of his conclusions, he discusses the 'problems of interpretation' throughout the book, and thus he allows the reader to make up his own mind about which factors were more

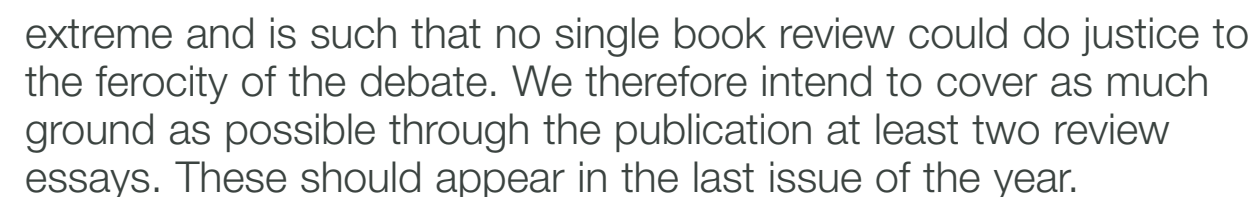
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extreme and is such that no single book review could do justice to the ferocity of the debate. We therefore intend to cover as much ground as possible through the publication at least two review essays. These should appear in the last issue of the year.

(London: Cassell, 2000)

## FORTHCOMING BOOKS

Among the most controversial figures to emerge from the relatively short period of aviation history is Air Chief Marshal Sir Arthur Harris, Commander-in-Chief of Bomber Command for much of the Second World War. The range of nicknames from 'Bert' through to 'Bomber' hints at the diversity of opinion. Biographical work has been limited and the forthcoming publication (12 September 2001 – just as this Journal hits the crewrooms and library shelves) of Air Commodore Henry Probert's book is highly welcome. The range of opinion can be





## **LUFTWAFFE BOMBER ACES MEN, MACHINES, METHODS**

**MIKE SPICK**

The Luftwaffe excelled at ground attack and revolutionised modern warfare. Whether flying in support of the panzer columns in the invasion of Poland and destruction of France, deployed against British airfields and cities, sent in against Soviet tank armies, or thrown into the defence of the Reich, Germany's bomber and dive-bomber pilots wrought havoc across the face of World War II Europe.

Mike Spick, author of a number of acclaimed books on fighter pilots, now turns his attention to outstanding ground-attack pilots. He outlines the Luftwaffe's revolutionary tactics, first tested during the Spanish Civil War, and highlights individual techniques and methods used against specific types of target. Biographical entries on the leading bombers – many of whom were awarded the Knight's Cross – give an insight into the diverse careers and backgrounds of Luftwaffe personnel and outline just what it took to be a successful bomber pilot.

First-hand accounts add gripping drama to the narrative, and give an unsurpassed appreciation of just what it was like to dive-bomb, come under attack by fighters or brave a barrage of anti-aircraft guns.

Mike Spick is an acknowledged expert on the history of aviation and

specialises in combat tactics. He is the author of a number of seminal books, including *The Complete Fighter Ace*, *Allied Fighter Aces* and the best-selling *Luftwaffe Fighter Aces*.

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**2001 FLYING BURSARIES**

The Trustees of the Air League Educational Trust are pleased to announce the award of the following bursaries to be flown during the summer of 2001:

**Flying Bursary/Sponsor**

- Air League Educational Trust
- Air League Educational Trust
- Air League Educational Trust
- Buckland Memorial
- British Women Pilots' Association
- Sir Michael Cobham
- Sir Michael Cobham
- Sir Michael Cobham
- Sir Michael Cobham
- Mark Philip Jones Memorial
- Norman Barber
- Royal Society of St George
- Sir Ross Stainton
- Women in Aviation

**Recipitent**

- Mr A Cuthbertson from Leeds, West Yorkshire
- Miss J B Tarrant from Chipping Norton, Oxon
- Mr M J Wilshire from Redruth, Cornwall
- Mr D Bunce from Horley, Surrey
- Ms S G A Macfadyen from North Woodchester, Glos
- Miss S A Burrows from Wilmslow, Cheshire
- Mr M R Hatton from Cheadle, Cheshire
- Mr A McClenaghan from Dunbarton
- Mr J N Thomas from Salisbury, Wiltshire
- Mr J A S Coulter from Farnborough, Hampshire
- Miss K M J Ansell from Ampthill, Bedfordshire
- Mr K S Gibson from Pontypridd, Mid Glamorgan
- Mr C R Goldfinch from Tunbridge Wells, Kent
- Miss A F Maclaren from Morayshire



2001 ENGINEERING SCHOLARSHIPS

The Trustees of the Air League Educational Trust are pleased to announce the award of the following 24 engineering placements to be undertaken 20-31 August 2001:

Company	Recipients		
BAE SYSTEMS, Brough	Mr K D Blake from South Shields, Tyne and Wear Miss C M Cougill from Burnley, Lancashire	Imperial War Museum, Duxford	Mr J M Stephens from Brecon, Powys
BAE SYSTEMS, Rochester	Miss L C Stubbs from Middlesbrough, Teeside Miss J Turner from Capel, Surrey	Marshall Aerospace	Mr J M Lawley from Didcot, Oxfordshire
Bombardier Aerospace	Mr I Briggs from Bangor, Co Down Mr G D Marshall from Newtownards, Co Down	McAlpine Helicopters	Mr P Fanyana from Sedlescombe, East Sussex
British Airways Engineering	Mr S D Barnes from Enfield, Middlesex Miss L Bunch from Corby, Northants	S I Aerospace	Mr R N Smith from Panfield, Essex
Flight Refuelling	Mr R Mpini from Battle, East Sussex	Slingsby Aviation	Mr S B Owen from High Wycombe, Bucks
FR Aviation	Mr G D Smith from Chard, Somerset	Tayside Aviation	Mr J J Bell from Kimberley, Nottinghamshire
GE Aircraft Engine Services	Mr J R Courtney from Llanelli, Carmarthenshire	Westland Helicopters	Miss M C Dimmer from Edinburgh Mr T J Holdstock from Alcester, Warwickshire
		Wycombe Air Centre	Mr C R Mitchell from Shrewsbury, Shropshire
			Mr J Sawkins from Chorley, Lancashire
			Mr A N Abbott from Falmouth, Cornwall
			Miss C Harrison from Saltash, Cornwall
			Mr M Newham from Billericay, Essex

2001 BREITLING BALLOON PPL SCHOLARSHIP

The Trustees of the Air League Educational Trust are pleased to announce the award of the following PPL (Balloons and Airships) Scholarship to be flown in Summer 2001. The training will be co-ordinated by Brian Jones.

Miss K H Morgan of Swindon, Wiltshire

**ROYAL AIR FORCE HISTORICAL SOCIETY**

- Formed in July 1986
- Studies the history of Air Power
- Examines the creation of Military Air Power and studies various topics including:
  - The strategic bomber offensive
  - Berlin Air Lift
  - The V Force
  - The RAF in the Far Eastern War
  - Falklands
  - Contemporary Air Power
- Lectures, Seminars, Discussions and Journal
- Self Financing, £15 membership per annum
- Information and Application Form from:  
Dr Jack Dunham  
Silverhill House  
Coombe  
Wotton-u-Edge  
Glos GL12 7ND  
Tel: 01453 843362
- The central objective of the Society is to bring together those involved in Royal Air Force activities in the past and those concerned today so that we can learn more about its history.

**RAFASUPU/NW CONVOY GROUP  
DINING-IN NIGHT**

To mark the passing of the convoy task, the NW Convoy Group (formerly the RAFASUPU, STCAS and BCAS) will be holding a Dining-in night on Friday 22 February 2002, at the Officers' Mess, RAF Wittering. Officers who have served as a Convoy exec (CC, EC, CSO etc.) or in close support of the Convoy are invited to attend.

Further details can be obtained from  
Flt Lt Paul Matthews, OC CEF NW Cvy Gp, RAF Wittering,  
Peterborough PE8 6HB. Telephone 01780 783838 Ext 3155/6058 or 95351 – 3155/6058, Fax 01780 782676.





## ST. CLEMENT DANES, STRAND, LONDON

### CENTRAL CHURCH OF THE ROYAL AIR FORCE

*This beautiful Wren church, which is also the Royal Air Force Central Church, has a world-wide following and is open daily from 08.30 am – 4.30 pm. There is Choral Eucharist or Matins every Sunday at 11.00 am, sung by the famous choir. Civilians and all members of the Armed Forces are welcome to visit the church and attend the Services.*