

AIR POWER REVIEW

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Air Commodore (Ret'd) Dr Peter Gray

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and Reforms in Professional Military Education
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Information Age Warfare
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Viewpoint
Group Captain (Ret'd) Ian Shields

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*Tornado, 20 years on operations
in Iraq and Afghanistan*

Foreword

This first edition of APR for 2011 opens with an article by one of our regular contributors and a former Director of Defence Studies, Air Commodore (Retired) Dr Peter Gray. Its subject is Air policing over Iraq. More importantly, it is a reminder of the value of the inextricable link between the academic discipline of history and the practical study of warfare. Over the centuries, warriors and academics have sought to understand and draw lessons from previous wars, whether successful or otherwise, to improve their chances of success – and to justify rhetoric. The use of air power over Iraq in the inter-war years has not escaped examination, especially in the light of the No-Fly zone operations from 1991-2003. This paper seeks to highlight some of the dangers in drawing shallow conclusions from a superficial reading of history and suggests ways of avoiding the pitfalls of dubious comparisons.

The second article is submitted jointly by Dr Joel Hayward, Dean of Academic Studies at the RAF College Cranwell, and Dr Tamir Libel, a Legacy Heritage Fellow at the Kinneret Research Centre Israel. Entitled 'Reflections on the Maxwell Revolution', it examines the contribution made by Colonel John A. Warden III to the Air Command

and Staff College (ACSC) at the USAF Air University. Colonel Warden is synonymous with the once-celebrated and still much-discussed "five rings" approach to air power targeting. He is less well known for his later tenure as Commandant of the ACSC, even though he instituted reforms and introduced ideas that transformed that relatively isolated college into a stronger and more influential military education centre. The article argues that Warden gained his appointment at the ACSC precisely at a time when, following the Goldwater-Nichols Act and the Skelton Report, the "professionalisation" of the USAF began to place far greater stock on education. It further demonstrates that, operating with relative freedom and guided by an idiosyncratic vision, Warden increased the rigour and robustness of the ACSC and also proved helpful in developing and inculcating concepts of air power that undoubtedly changed thinking in the USAF, at least for a time.

Staying with the Warden theme, but from a different angle, the next article, submitted by Lt Col (Retired) Richard Newton, a former air commando from the U.S. Air Force, is entitled 'Strategic paralysis in Irregular Warfare' and seeks to show how Warden's 5-Ring model may be applied to irregular warfare. Although, the 5-Ring

model was originally developed for conventional-regular opponents and industrial, interstate warfare, Richard Newton argues (contentiously) that Warden's Rings also offers an effective model to be applied in the context of modern irregular warfare. The article also contends that when unable to directly target the adversary's leadership (commander, sovereign, chief executive, etc), strategic paralysis can still be achieved by operations, both non-kinetic and kinetic, in the four outer rings of the model. The indirect approach to strategic paralysis becomes more difficult and takes more time the further one moves away from the centre of the model. To achieve strategic paralysis in irregular warfare requires a composite approach; direct actions focused on neutralising the leadership/decision-makers—the adversary centre of gravity, and indirect actions in the outer rings to isolate, marginalise, and discredit the adversary leadership.

Continuing the counter insurgency theme, albeit from an earlier age 'Aviation and Guerrilla war - proposals for air control of the North West Frontier of India', is a follow on from the excellent 'Pink's War' published in APR 13/3, also authored by Lieutenant Colonel Andrew Roe. In early 1925 Wing Commander R. C.

M. Pink tested the utility of air control against the mountain strongholds of the Mahsud tribesmen on the North-West Frontier of India. The 54-day air campaign was a success – with the loss of only two British lives – and proved to be a timely catalyst for an ambitious plan for the RAF to take full control of the precipitous frontier. But unlike Mesopotamia, Transjordan and Palestine, policing by bomber gained little traction on the frontier, despite repeated attempts. Pulling the many competing threads together, this article highlights the discourse behind the proposals to employ aircraft to control the frontier, exposes the inter-Service relations, and brings to light the key personalities involved.

Wing Commander Steve Chappell provides the next article, which also uses a historic lens to draw lessons of value for operations today. The article examines the efficacy of airpower in combating counter insurgencies, in particular the contribution the RAF made to the Mau Mau conflict. It contends that the RAF's involvement in this conflict was considerable and in many respects, was viewed as the Government's chief weapon for tackling the insurgents. Although it occurred almost sixty years ago, the RAF's involvement offers a number of lessons for airpower's use in counter insurgencies today.

Wing Commander (Retired) Stew

Edmondson offers the final article for this edition of APR. A fascinating piece entitled 'Networking not 'the Network': the key to information age warfare'. Against the backdrop of Armed Forces harnessing information technologies through the concept of Network Enabled Capability (NEC), the article contends that there is no empirical proof that the quality of military judgement has improved with the spread of networked computing and information systems. Nevertheless, we are encouraged to trust that decision making will somehow be 'better' in the NEC future. The paper argues that, at best, investments in network infrastructure will provide improved Network Enabled Capacity. The provision of improved interconnectedness and sharing of information may provide the potential to make improvements in the cognitive domain. Wing Commander Stew Edmondson's main thesis is that the nirvana of making 'better' decisions cannot be extrapolated directly from improvements made in the network infrastructure and information levels. He suggests that this is a fallacy based on the adoption of a technological rather than a constructivist view of information. Moreover, that it fails to take proper account of the actual cognitive processes associated with decision making. The article concludes by

suggesting that exploiting social networks could provide the key to improving cognitive performance and to making 'better' decisions in the future; thus emphasising the importance of networking, rather than 'the network' in Information Age warfare.

Finally for this edition, Group Captain (Retired) Ian Shields, another regular contributor, offers his provocative viewpoint on the importance of Space to national security, posing a number of questions that are worthy of further consideration.

Notes on Contributors

Air Commodore (Ret'd) Dr Peter Gray retired from the Royal Air Force in June 2008 and took up the position of Senior Research Fellow in Air Power Studies at the University of Birmingham on 1st September 2008. Prior to retirement, Gray was Director of the Defence Leadership and Management Centre taking up post in September 2004. Gray spent his early career as a navigator on the F4 Phantom aircraft and, more recently, commanded 101 Squadron flying VC10 K tanker aircraft. He has spent two staff tours in the personnel field followed by a lengthy sojourn in the Cabinet Office, several appointments in the Ministry of Defence and has served as Director of Defence Studies for the Royal Air Force. Gray holds degrees from the Universities of Dundee, London, Cambridge and Birmingham (PhD). He is a Fellow of the RAeS and of the Institute of Leadership and Management.

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Dr Joel Hayward is the Dean of the Royal Air Force College. He is also a Director of the Royal Air Force Centre for Air Power Studies (RAF CAPS), the Head of King's College London's Air Power Studies Division and a Professor of Strategy at the Indonesian Defense University. He is also the lead academic for King's MA, Air Power in the Modern World, which is the UK's first specialist degree programme in air power studies. He is the author or editor of eight books as well as many book chapters and journal articles, some of which have appeared in German, Russian, Portuguese, Spanish and Serbian translations. He lectures widely throughout Europe, Asia and beyond on various defence and security topics and on the Qur'anic concepts of war and justice.

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Dr Tamir Libel holds a BA in History from Tel-Aviv University and an MA and PhD from Bar-Ilan University, both in Political Studies. He was a postdoctoral fellow at the BESA Center for Strategic Studies and is now a Legacy Heritage Fellow at the Kinneret Research Center on Peace, Security and Society at the Kinneret College of the Sea of Galilee, Israel. His PhD dissertation compares changes in western professional military education institutions between 1991 and 2003. He has published several peer-reviewed journal articles and presented papers on military education, Israeli military doctrine and air power at several major international conferences. This is his second collaborative article with Joel Hayward written for *Air Power Review*. They are planning at least one more article together and then possibly a book on air power thought.

Lieutenant Colonel (Ret'd) Richard Newton is a former air commando from the U.S. Air Force. He served for 22 years as a combat rescue and special operations helicopter pilot, planner, and educator. 'Newt' had operational flying tours in Korea, Florida, Iceland, and New Mexico, and is now on the teaching and research faculties at the NATO Special Operations School at Chièvres AB, Belgium, and at the Joint Special Operations University, MacDill AFB, Florida. Mr Newton earned a Bachelor of Science from the U.S. Air Force Academy and holds a Master of Military Art and Science from the U.S. Army School of Advanced Military Studies. He is currently a Ph.D. candidate in the Defence Studies programme at Kings College London.

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Lieutenant Colonel Andrew Roe YORKS, Commanding Officer, 2nd Battalion The Yorkshire Regiment (Green Howards), was commissioned into the 1st Battalion the Green Howards in 1992. He has held various command and staff positions in Northern Ireland, Germany, Bosnia, Afghanistan, the Falkland Islands and Iraq. He is a graduate of the U.S. Army Command and Staff College and the School of Advanced Military Studies, Fort Leavenworth, Kansas. He has a PhD from King's College London and is the author of *Waging War in Waziristan: The British Struggle in the Land of Bin Laden, 1849-1947*.

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Wing Commander Steve Chappell is a Logistics Officer currently based at the Permanent Joint HQ, Northwood. A recent graduate of the Advanced Command and Staff Course, he has served in a number of logistics appointments during his career including tours in Iraq and Afghanistan. Prior to attending Staff College in 2009 he was the CO of the Logistics Training Squadron at RAF Halton, responsible for training future Airman of the RAF Supply Trade and Officers in the RAF Logistics Branch.

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Wing Commander (Ret'd) Stew Edmondson joined the RAF as an Engineering Officer (C-E) in 1986 after reading for a degree in electronics at the University of Salford. His early tours included RAF Benbecula, 9 SU Boddington, HQSTC and HQLC before promotion to squadron leader in 1995. He commanded Number 11 Signals Unit at Rheindahlen, Germany

before returning to HQ STC as the Desk Officer for deployed communications strategy. On promotion to wing commander he served as Chief of Staff to the Director of Communications and Information Systems (RAF). During this time he completed his MBA with the Open University Business School. He was then the policy lead for CIS engineering regulations, Information Management and CIS manpower strategy. He attended the Advanced Command and Staff Course (ACSC 10) at the Defence Academy, passing the course with Distinction and gaining an MA from King's College. His military career culminated as the Commanding Officer of Number 1 Radio School, training the RAF's ICT apprentices at RAF Cosford. In Feb 10, he left the RAF after 23 years service and joined QinetiQ, where he now works as a principal consultant specialising in Defence technical training.

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RAF Air Policing over Iraq – Uses and Abuses of History

By Air Commodore (Ret'd) Dr Peter Gray

The academic discipline of history and the practical study warfare have been intertwined since man first sought to record his thoughts in writing and in oral history. Over the centuries, warriors have sought to fathom the depths and the mysteries of previous wars, whether successful or otherwise, to improve their chances of success – or to justify rhetoric. The use of air power over Iraq in the inter-war years has not escaped, especially during the No-Fly zone policing period of recent years. This paper seeks to highlight some of the dangers in drawing shallow conclusions and suggests ways of avoiding the pitfalls of dubious comparisons.

*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 Howard¹

Introduction

The essential theme of this paper is that there are real dangers in drawing parallels between what has happened in the past and the events of today, and air policing over Iraq has been no exception. The victims of the potential pitfalls extend beyond the policymakers and practitioners to include students at every level of education. Also vulnerable are the casual, but interested, readers of military history whose latest foray into a given subject invites the immediate construction of 'lessons'. Equally prone to misinterpreting the past are the legions of those charged with commenting on the present who will inevitably feel tempted to delve into history, either from shortage of material, impoverished analysis or a misplaced certainty that the parallels exist. It will be further argued that although these risks exist in any field of history, military history is particularly prone to the challenges.

The period in which the RAF, along with its allies, operated over Iraq is at least as vulnerable to these difficulties as any other in air power history. This paper will outline some generic challenges to the use and abuse of military history. It will then outline some possible guidance on how history can be used before analysing some of the key challenges pertinent to air policing and Iraq.

Uses and Abuses of Military History

All elements of history within the widest definition of the subject are possible areas for exploitation in both the beneficial sense and in terms of possible abuse. Military history certainly falls within that category. For a paper that was initially prepared for delivery in a Staff College environment, it is worth adding that the students studying therein, worldwide, both add to the risk and suffer from it. The same is, however true of University students at every level when they come to choose titles and subjects for dissertation purposes. In both environments (and arguably there is considerable overlap in degree-awarding establishments with many staff colleges offering masters level degrees) the onus is on the author to identify an interesting, or challenging subject area; analyse what has been said before; highlight gaps or areas of controversy; and then describe how their work will contribute to the sum of knowledge. Inevitably, the degree of care, desperation, clutching at straws or brilliance will vary depending on the skill of the student, the patience of the supervisor and the availability of source material. The point of this is that in the 'old days', once examined, the document would have been consigned to a large box-file and deposited in a locked store cupboard. The reality now is that these things are likely to surface with regularity when summoned by Google Scholar or some other search engine – albeit without the possibly feisty comments of the examiners. At the very best, this vastly increases the amount of material available for present and future scholars. At worst

it also increases the amount of critical analysis that has to be expended on the subject in question.

In choosing subjects for study, current operations are always both relevant and popular. Often the detail is classified and has to be avoided.

One way of achieving this is to draw parallels with earlier periods: this is especially attractive when the location chosen has been fought over before – in this case Iraq. The temptation is even greater if the operations are kinetic, coercive or involved in ‘influence’, but the fighting is short of full scale war. Again the relevance of air policing and Iraq loom large. But attempting to do this type of study requires a much broader analytical approach than is often considered prevalent in ‘military history’.

The discipline of military history is a vexed subject in its own right. This is a topic for a paper in its own right and there are many criticisms, not least that many exponents of the profession have tended to concentrate on the tactical detail and the events on the operational front without having recourse to the wider context.² The very breadth of works published on military topics compounds the difficulty in using history as a guide. This in turn is complicated by the reality that what purports to be a historical work may well turn out to be a non-specialist re-interpretation by a non-specialist; this is particularly problematical when historical events are used to justify a particular theory as occurs regularly in the business school world examining leadership.³ ‘Real’ military history – if there is such a thing – is as influenced by ‘schools of thought’ as any other field of history whether it be a Marxist

interpretation, post-modern or Whig. But critically, military history is also prone to micro-schools of thought that are specific to a period of writing. In the case of this paper there was a clear service-level (or environmental) school of thought emanating from some, but not all, air power scholars that ‘air power could do it alone’. An immediate parallel to current debates is over the importance of ‘boots on the ground’. The real danger is that these schools of thinking descend into dogma and influence the historical work in its formulation and, worse, in its subsequent interpretation. The issue of dogma immediately raises the spectre of doctrine and policy. But without entering this fraught arena, it is worth noting that military history is probably more prone than most areas to the challenges of the short span from practice and policy.⁴

The final area where the use of military history can become undone is over myths. Michael Howard considers that they have a useful social function as ‘nursery history’ which is beneficial in providing a palatable introduction to the realities of warfare.⁵ But he goes on to argue that where an interpretation of history is merely a myth, and this is exposed as such, it can be ‘an anguish to be deprived of it’.⁶ It could be argued that military history, and military practitioners in particular, are especially prone to the establishment of myths and reliance thereon. Accordingly myths become another challenge to the use of military history in analysing contemporary events.

How to use Military History – some thoughts for guidance

It could be argued that military

professionals could do far worse than follow Howard's 'three general rules' for those wishing to study military history; these involve studying in width, depth and context.⁷ But doing so in isolation from some of Howard's other comments on the education of the military profession would lead to an incomplete analysis. In the context of the air presence over Iraq some of his assertions just do not hold up to the realities of that period. The first of these is that the soldier, sailor and airman would only be likely to engage in their profession once in a lifetime.⁸ Furthermore, warfare, unlike economic, political or administrative activity is intermittent.⁹ He goes on to state that war is 'clearly defined, with distinct criteria for success or failure'.¹⁰ This observation risks a detailed debate on whether the air policing over Iraq was actually war, or merely military activity. But it cannot be termed 'intermittent' and the criteria for success or failure were not easily stated.¹¹ These are but some of the challenges facing students of the period.

Notwithstanding the reservations over Howard's wider comments his 'general rules' remain valid. By studying in *width* (Howard's emphasis), those seeking to establish lessons or precedents, or even just gain a greater understanding, should read far beyond the immediate period and seek out the discontinuities as well as the parallels.¹² Howard then advocates taking a single campaign and going beyond the official histories (and the ever-increasing mass of secondary literature) by examining memoirs, diaries and letters to gauge 'what really happened' thus removing the veneer of order left by

previous historians.¹³ The third, and arguably most important, guideline is the requirement to study in *context*.¹⁴ Not only are the 'roots of victory and defeat' apparent from wider social and economic factors, but so are the reasons for the conflict and its continuation. The twenty years of operations over Iraq can only be understood by examining each of these in a critical and analytical way.

Air Policing over Iraq

One of the chief problems with trying to deploy precedents from military history in examining air power over Iraq is just that; the issues, past and recent were a long way from being just being military in nature. Howard's criteria of width, depth and context are useful tools in analysing the historical backdrop to the Twenty Years over Iraq.

Many who have merely relied upon the geographical proximity of the operations immediately miss the whole point of width. Air policing was carried out in the inter-war years in other areas. The reality is that the wider issues implicit in air policing were applicable from Great Britain and Ireland through Palestine and Africa to India. The political situation was different in each region as were the strategic imperatives. It should therefore go without saying that the missions facing Imperial forces (not just the British troops) were different, as were the threats.

For a subject such as this to be given adequate coverage, the depth issue is almost insurmountable for many casual students. The ability to spend the requisite amount of time in appropriate archives studying letters, memoirs and original files is

problematic. The standard recourse to lack of time in historic study is the use of secondary literature and citing material chosen by others. This flies in the face of Howard's admonition that the student needs to get beneath the veneer. Although this can feasibly be offset by due critical analysis of the secondary sources, this is not the normal result. Instead the student adds to existing veneer, often introducing (to take the metaphor a bit far) a further layer of dust and grime.

The greatest challenge to historians and students of the air policing period who have subsequently attempted to draw parallels and lessons has invariably been the absence of context. The decision to deploy air power to Iraq/Mesopotamia was taken in the immediate aftermath of the First World War and an understanding of the economic situation is key to appreciating the wider situation in which the decision was taken. By mid-way through the First World War it was evident that the material costs would be unprecedented. The actual monetary value of the munitions expended was greatly exacerbated by the hidden costs involved in refiguring industry onto a wartime footing and then returning it to peace – turning ploughshares to swords and then back again does not come cheap. These costs escalated rapidly with the unprecedented application of science and technology into areas such as shipbuilding, tanks and the aircraft industry. Shipping losses were huge. The human costs were horrendous with 8 million servicemen killed, 7 million permanently disabled and a further 15 million wounded in some

way. Civilian casualties amounted to at least 5 million with many times that in Russia. The monetary cost has been estimated at \$260 billion which equalled 6.5 times the world national debt accrued from the end of the 18th Century to the outbreak of the War.¹⁵ Britain lost 6.3% of her male population (723,000) a significant proportion of whom were from the social elite (28% of those going up to Oxbridge in 1910–1914 died in the War).¹⁶ The manpower requirements had caused Britain to draw deeply from the resources of the Empire as well as from home – nearly one third of British manpower came from abroad.

Imperial policing was a major, if not the most significant, defence task for all three services. The Army, along with Imperial forces and locally raised levies were constantly involved. The Royal Navy was charged with protection of the sea and trade routes. It was only natural that the fledgling Royal Air Force would seek a role in the work at hand. The centrality of these tasks to the *raison d'être* of the armed forces is hard now to grasp with the later focus on home defence and then NATO.

The struggle for their due share of the defence expenditure has always been high on the military list of priorities. It is not at all surprising therefore that both the Navy and the Army would resent every penny spent on the third arm. It is equally unsurprising that Trenchard and his senior colleagues would employ all means to ensure its survival. Whilst this is well-trammelled ground, it is important to note that what was in dispute was not the immediate use of air power. What was contentious was that the

Royal Air Force needed to exist as a separate Service in order to provide that capability at the front line. At the time, it appeared that this could only be justified if air power could claim outright primacy with its own people as the C-in-C, or with independent access to the political authority of the country or mandate concerned. Anything less than this would have undermined the chances of survival. This is not the same as more recent arguments advocating that air power can 'do it alone'. Nor do many of the 'air control' arguments rest on the use of the bomber acting against strategic targets – although this was suggested from time to time (for example, over Kabul). Ironically, the real debate was not about air power doing it alone – it was more about air in the lead. This can best be illustrated using the expression of 'air control' as meaning air as supported commander – i.e. in control of the whole operation.

The situation at the beginning of the first Gulf war was hugely different in terms of the economic situation. But at a superficial level there were similarities; the pressure on budgets, for example, would have been familiar to Trenchard and Salmond. By 1990, the demise of the Warsaw Pact had seen the almost desperate clamour for a 'peace dividend' resulting bizarre occurrences such as the financiers seeking the disbandment of squadrons as they were on the very brink of deployment to theatre. Another key parallel was the advancement of technology with all of the associated costs; the air war during 1991 had showcased the potential of modern air power, amounting in some authors' opinions to a revolution in

warfare. The apparent parallels are all too seductive, tantalising and yet ephemeral; but the difficulties did not prevent the attempts at describing unhelpful precedents.

The Motivation for Drawing Precedents

The first motivating factor for students of air power to want to draw parallels emanated from the 'do-it-alone' school. The essence of this was that with the demise of the Warsaw Pact, the impact of which was then still having serious repercussions, super-power levels of conflict had been replaced by more containable, conventional conflict. In these potential conflicts, commanders and their political masters would have clear choices of the weapons needed to bring about the resolution. The air war against Iraq in 1991 had allowed the land forces to 'mop up' in 100 hours of concentrated manoeuvre. The more extreme of the air power prophets considered that the weight of the air offensive alone could win future conflicts without the need, or even the threat of a ground offensive. Seeking parallels within the air policing operations over Mesopotamia in the inter-war years thought that they had the ideal precedent. The reality was that these operations required close co-operation with discrete ground forces, and especially with political officers who were well-versed in local conditions. Nevertheless, it was clear that air power was both the weapon of first resort and that the air component was the supported, not the other way round. Furthermore, the air operations were much more economical than major operations

requiring large formations of ground troops.

The period between the wars against Iraq was one of reducing defence budgets across many nations. In this environment, there was considerable pressure to use the force elements, or risk seeing them consigned to obsolescence or even oblivion. Whole capabilities were likely to be lost. This is often a short-term view, but particularly evident in the thinking of finance ministries and Treasuries. The rhetoric runs along the lines of 'if you didn't use it in Iraq, when are you: it is a cold-war legacy so cut it'. Arguably, we are still hearing the same over Afghanistan. In attempting to impose a longer term view, the air power advocate would appeal to the lessons of history for evidence that there was real value in terms of flexibility, agility and in the case of air policing the evident virtues of impermanence! One of the key factors to emerge from the first Gulf War, which was then constantly reinforced during the no-fly zone period, was the importance of precision. But the desired degree of accuracy inevitably came at a considerably increased cost which had to be defended by current and future requirements, bolstered with recourse to the past.

Inextricably linked to the quest for precision for genuine operational reasons was the wider requirement for the campaign to be waged in a humane or ethical manner. The cynics may have argued that this merely because of the risk of being caught by CNN, but this is overly harsh in that most planners and policymakers appreciated that the inevitable regime change would

have to be followed by a wider accommodation with the populace. In addition to the fundamental importance, for its own sake, of waging an air war in a just, discrete and proportional way, it was vital for the cohesion of the alliance and for the domestic audiences in the contributing nations in particular. Recourse to history in this area was particularly fraught, especially if taken out of context and only considered without depth and breadth. The context in the inter-war years encompassed the very survival of the fledgling Service and the acrimony from the other two over what they perceived to be a diversion of assets. Any criticism of air policing was worth the airing and, in the aftermath of the First World War, there was a ready audience for tales of inhumanity and brutality. A flavour of the rhetoric was the comment from Sir Henry Wilson as CIGS that the essence of air policing was the 'bomb that falls from God knows where and lands on God knows what'.¹⁸ But as Slessor recounts from his own experience, considerably more damage and destruction was caused by artillery – a reality in Afghanistan today.¹⁹ Whether in the press, parliament, the corridors of the financial planners or the drinking houses of Whitehall, it is easier to condemn air power for indiscriminate action as 'proved' by history than it is to meticulously to build the case for the defence citing the archival records, memoirs and so forth as commended by Howard in his quest for depth.

Conclusions

The RAF air policing operations over Mesopotamia in the inter-war

years have been scoured for lessons, parallels and precedents that could be applied to operations in more recent times. These lessons from history have been sought for a variety of reasons and in a number of contexts. The first of these has been to 'prove' that air power could 'do it alone', or at the very least should be the weapon of first choice. Inherent in this is that the air component could, and to the more vocal, should be the supported component. These arguments and debates become all the more germane in periods of economic downturn, fiscal uncertainty and devastated budgets. Finally, but no means last, the detractors of air power have frequently sought to draw parallels between the alleged indiscriminate, or inhumane, nature of air power in the inter-war years with more modern conflicts. The reality that artillery has often resulted in greater damage and death is almost invariably overlooked.

In attempting to draw lessons from the 'Delphic Clio', the modern student of history, whether they be historian, politician, financier, business school guru or moral philosopher, would well at least to note Professor Sir Michael Howard's advice that the scholar should do her or his research in breadth, depth and context. Arguably the latter is the most important. The scholar, policymaker or practitioner needs to examine the wider context of the times in which history was recorded embracing geo-strategic, economic, technological and policy factors. But they also need to understand the circumstances in which the original authors committed their thoughts to paper. Why did they write? What

messages were they trying to get over then, or leave for posterity? For current policymakers in particular, why are you scouring history? Is your intent honourable use, or do your studies harbour dark threats of abuse?

Notes

¹ Michael Howard, 'The Use and Abuse of History', in *The Causes of War, and other essays* (London: Temple Smith, 1983), page 195.

² For an introduction see Peter W Gray, 'Why Study Military History', *Defence Studies*, 5(1) March 2005, pp. 151-164. For this particular warning see Jeremy Black, *Rethinking Military History* (London: Routledge, 2004), p. xi.

³ See for example, Alan Axelrod, *Patton on Leadership: Strategic Lessons for Corporate Warfare* (New Jersey: Prentice Hall, 1999) and Keith Grint, *Leadership, Management and Command: Rethinking D-Day* (Basingstoke: Palgrave Macmillan, 2008).

⁴ At a general level see Richard Overy, 'Doctrine not Dogma: Lessons from the Past', *Royal Air Force Air Power Review*, 3(1) Spring 2000, pp. 32-47.

⁵ Howard, 'The Uses and Abuses of History', p. 189.

⁶ Howard, *ibid.*, p. 190.

⁷ Howard, *ibid.*, p. 195. Given as guidance to contributing authors in John Olsen, *A History of Air Warfare* (Dulles VA: Potomac, 2010), p. xiii.

⁸ Howard, *ibid.*, p. 194.

⁹ Howard, *ibid.*, p. 193.

¹⁰ *Ibid.*

¹¹ See Col. Mark Garrard USAF, 'War Termination in the Persian Gulf: Problems and Prospects', *Aerospace Power Journal*, XV(3) Fall 2001, p.42.

¹² Howard, *ibid.*, pp195-6.

¹³ *Ibid.*, p. 195.

¹⁴ Ibid.

¹⁵ All figures taken from Paul Kennedy, *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 – 2000* (London: Fontana, 1989), p. 360.

¹⁶ David Reynolds, *Britannia Overruled: British Policy and World Power in the 20th Century* (London: Longman, 1991), p. 105

¹⁷ See, for example, Richard P. Hallion, 'Precision Air Attack in the Modern Era' in Richard P. Hallion, *Airpower Confronts an Unstable World*, (London: Brassey's, 1997), p.129. See also Col. Philip S. Meilinger USAF Ret'd, 'Precision Aerospace Power, Discrimination and the Future of War', *Aerospace Power Journal*, XV(3) Fall 2001, p.12.

¹⁸ Cited by MRAF Sir John Slessor, *The Central Blue* (London: Cassell, 1956), p. 66.

¹⁹ Ibid.

Reflections on the Maxwell 'Revolution': John Warden and Reforms in Professional Military Education¹

By Dr Joel Hayward and Dr Tamir Libel

Colonel John A. Warden III is synonymous with the once-celebrated and still much-discussed "five rings" approach to air power targeting that the United States Air Force and its partners first attempted to utilise in 1991 during Gulf War I. Warden is less well known for his later tenure as Commandant of the Air Command and Staff College (ACSC) at the USAF Air University, even though he undertook reforms and introduced several ideas that transformed that relatively isolated college into a stronger and more influential education centre. This article argues that Warden gained his appointment at the ACSC precisely at a time when, following the Goldwater-Nichols Act and the Skelton Report, the "professionalisation" of the USAF began to place far greater stock on education. The article demonstrates that, operating with relative freedom and according to an idiosyncratic vision for the ACSC, Warden increased the rigour and robustness of the ACSC and also proved helpful in developing and inculcating concepts of air power that undoubtedly changed thinking in the USAF, at least for a time.

Introduction

Colonel John A. Warden III is synonymous with his once-celebrated and still much-discussed “five rings” theory; the supposedly holistic approach to air power targeting that the United States Air Force and its partners first attempted to utilise, albeit only partially, in 1991 during Gulf War I. Warden is less well known for his post-Gulf War tenure as Commandant of the Air Command and Staff College (ACSC) at the USAF Air University, even though he undertook reforms and introduced several ideas that transformed that relatively isolated and unimportant college into a stronger and more influential centre of professional military education. One scholar recalled that Warden “stirred up that institution greatly”.² This article will attempt to determine how the so-called “profession of arms” — a largely passé nineteenth-century phrase used collectively to denote those involved in organised military activity — came to be regarded as a true modern profession with its own body of theoretical knowledge, codes of conduct governed by “rules,” skills unique to the profession and hard-to-master expertise that distinguishes the professional from the lay person. This article will then argue that Warden gained his appointment at the ACSC precisely at the time when the “professionalisation” of the USAF began to place greater stock on education and that he proved helpful in developing and inculcating concepts of officership that have undoubtedly benefitted the USAF.

It really is a profession

The study of military professionalism,

military officers as professionals and professional military education institutions has emerged as a subset of the broader field of civil-military relations. Cathy Downes notes that the basic distinguishing characteristic between a profession and other occupations is the existence of a theoretical body knowledge and practical skills thereof derived. In other words, mastery of a distinct body of knowledge, and the judgments derived from it, serve as the foundation for the practical skills of professionals. Laymen, who have not been commissioned as members of the profession, would find it difficult to acquire the knowledge and skills unique to it.³ This seems to create a type of professional monopoly.⁴

Samuel Huntington — who, along with Morris Janovitz, was a pioneer in the field of civil-military relations — was the first to define military officership as a profession and officers as professionals. The military profession, Huntington argued, is very similar to other professions in many ways, but is ultimately distinguishable from them in its reliance on a unique theoretical body of knowledge and a derivative skill-set related to the “management of violence”.⁵ On the basis of this definition, Gwyn Harries-Jenkins argues that the cardinal characteristics of a military professional are obedience and loyalty to the authority of the state, military qualifications, devotion to the use of professional skill in the defence of the state and moral and political neutrality.⁶ Downes and others have observed that, while Huntington argued that the “management of violence” was the core activity of

the military profession, his concept does not cover the entire range of activities in which military officers partake. Harries-Jenkins notes that Huntington's definition makes it inherently difficult to categorise the many military officers who satisfy non-combatant responsibilities (that is, roles involving no warfighting or "violence") as members of the military profession.⁷ Clearly they *are* members, given that they share with the warfighters they work alongside the same body of theoretical knowledge, codes of behaviour, skills unique to the profession and hard-to-master expertise.

Social scientists nowadays believe that, in contrast to most professionals, but similar in some ways to medical doctors or lawyers in civil service, military officers operate within overarching, highly structured and stratified formal organisations: the armed forces. These organisations supervise the activities of their members, formulise the professional knowledge at their core, and establish the criteria and processes of recruitment and selection. Moreover, the positions allocated to professionals within the formal organisations are entwined with roles focused on the functional purpose of the organisations and not the professional vocation of the professionals. The autonomy of a professional employed in this type of formal organisation is consequently severely curtailed.⁸ Leading scholars in the field now tend to argue that military organisations have a dual nature: professional and bureaucratic. In their view, professions focus on the creation of abstract expert knowledge which the professionals are then

experts at implementing to solve tangible and substantial problems. In contrast, bureaucracies focus on the implementation of knowledge through routines and organisational procedures which their employees are expected to execute.⁹

Scholars now talk about the duality of expert military knowledge: formal knowledge recognised as the collective memory and practice of the military organisation and professional knowledge (including the complimentary skill-set) which underpins the expertise of every officer as a professional. A professional military organisation will seek to develop knowledge and disseminate it amongst, and inculcate it into, its members in order continuously to improve their competency and effectiveness. Military organisations may even be distinguished by the levels of their professionalism; that is, by the degree of their investment and effort in these activities. The growth of expert military knowledge is accomplished, among other means, through the development and implementation of formal, written military doctrinal literature in the military education system. Doctrine is the body of institutionally approved and widely articulated concepts, practices and procedures which inform and guide the role of professionals and give them senses of common purpose and common activity. It not only creates a better and clearer understanding but also enhances, or attempts to enhance, their sense of community and their *esprit de corps*. It is the codification of what military personnel should both understand (their beliefs) and do (their practices).¹⁰

Many militaries have a long history of orally disseminated doctrines which include informal and implicit beliefs that are, or should be, prevalent among particular groups.¹¹ Throughout the twentieth century, however, as war became larger in scale and more complex and multi-faceted in nature, militaries began to express their formal doctrines in written publications and regulations.¹² Nowadays, doctrinal literature goes far beyond informal and implicit beliefs. It is formal and explicit.¹³ It is also now intimately connected with military training and education. To varying degrees doctrinal literature serves as the formal framework upon which training and educational curricula in the military are hung. Doctrinal publications in training and educational courses assist officers and others from different (sometimes seemingly unrelated) branches to develop common understandings, common practices and a shared abstract or conceptual language.¹⁴

Therefore, the main role of professional military education institutions is to equip officers with distinct and exclusive expert knowledge, shared values and the unmistakable sense of *raison d'être* unique to the profession. Unlike law or medicine, the professional military educational system not only prepares, trains and educates candidates for initial inclusion and “membership” within the profession, but also, through institutions of professional military education, continues to develop them and enhance their professional credibility and competency throughout their careers; indeed, right up to the very highest levels of their organisations.¹⁵

While reviewing the draft of this article, Influential air power scholar Phillip S. Meilinger highlighted another major difference between the training and educational environments (and indeed the moral cultures) of various professions: “The military is a unique profession because it has an ‘unlimited liability clause’ — you are expected to risk your life — something that, say, doctors or lawyers don’t generally have to worry about.”¹⁶

According to Martin van Creveld, the primary task of military education institutions, at least before the end of the twentieth century, was to educate officers to serve as commanders (or brigade, division and corps staff officers). The curriculum meandered between training and education, theory and practice, and military and non-military issues. On average, advanced-level courses in the military education institutions lasted one year. In partial compensation for the relatively short duration (less than almost all university courses), the academies imposed upon students heavy class loadings each week (far heavier than found in most universities). Until fairly recently, the teaching staff at the institutions was not comparable with that found in universities and other civilian tertiary institutions. Military instructors on advanced courses were usually majors and lieutenant colonels, who were not necessarily selected because of demonstrable relevant specialisations, much less credible and appropriate qualifications. Even in terms of classroom management, they seldom stayed in post long enough to create truly effective teaching and learning environments.

This situation notwithstanding, young PhD graduates whose academic qualifications (and teaching experience, in many cases) exceeded that of their military colleagues, often worked alongside them in staff colleges and other centres. Yet many of these recent PhD graduates appear to have been unsuccessful at gaining top-flight academic posts in the better universities within the wider academic market.¹⁷ The heavy daily teaching load then allowed them few opportunities and little energy for professional development and for making significant progress with their personal research and publication programmes. Even less satisfactorily, the institutional reputation of military academies and colleges suffered from the fact that very few, even in the United States, were authorised to award degrees (particularly higher degrees) in military disciplines or indeed in any fields. Any military officers therefore wanting to undertake advanced tertiary study leading to higher qualifications within their profession had to go outside their profession in order to gain their qualifications.¹⁸

Winds of Change

This inadequate situation began to change in the last fifteen years of the twentieth century, when, for the first time, military academies, staff colleges and other institutions of learning began to take this issue of professionalism more seriously and to include far more credible teaching staff recruitment policies, far more robust and transformational curricula and improved accreditation strategies. Rather than being “in-house” training colleges in which military officers taught other military

officers to think and act as they did, or as they believed the organisation wanted them to, the academies and staff colleges began to inculcate students with a profound sense of the value of broad and critical education in which they should learn how to think, not necessarily what to think. One of the key drivers in this process of transformation was the United States Department of Defense Reorganization Act of 1986, which was sponsored and drafted by Senator Barry Goldwater and Representative William Flynt “Bill” Nichols.¹⁹ The so-called Goldwater-Nichols Act resulted from grave dissatisfaction at American military professionalism as well as the military’s performance in Vietnam, Granada and during the bungled Iran hostage rescue attempt. The Act reorganised the Department of Defense with the aspiration of enhancing its jointness and diminishing the inter-service rivalries that had reduced effectiveness and weakened morale. Amongst its reforms, the Act elevated the importance of joint professional military education. In one key section it stated that “an officer who is nominated for the joint specialty may not be selected for the joint specialty until the officer (A) successfully completes an appropriate program at a joint professional military education school and (B) after completing such program of education, successfully completes a full tour of duty in a joint duty assignment.”²⁰ The Act also mandated that each intermediate and senior training and education institution within the armed forces must periodically review and revise its curriculum in order to strengthen its focus on jointness and officer preparation for joint duty.²¹ Just as

important, an influential 1989 House of Representatives panel investigation into military education chaired by Isaac “Ike” Skelton IV produced an in-depth report — the so-called Skelton Report²² — which stressed the need for military education institutions to provide more professional and highly qualified faculty and increased academic rigor within curricula.²³

The Goldwater-Nichols Act and the Skelton Report were extremely influential in determining the way in which the US military understood professionalism and undertook training and education. By the beginning of the 1990s it had consequently become clear that, rather than slowing or impeding officers’ careers as they previously had²⁴, postings into (and successes within) joint assignments had become a necessary condition for elevation to the highest of ranks or weightiest of responsibilities. Given that joint professional military education was a stepping-stone to the acquisition of key joint posts, this education finally seemed to matter to those undertaking it. It started to count.

When the Goldwater-Nichols Act transferred authority from the individual service chiefs to the Chairman of the Joint Chiefs of Staff, control of Joint Professional Military Education (JPME) passed to the Joint Staff. A new Joint Education Division (in J-7) emerged to oversee all JPME. The Division granted accreditation to various JPME programmes, determined objectives and standards for evaluation and special fields of emphasis and conducted periodic surveys of joint curricula provided by academies and colleges.²⁵ Although JPME was only

one part of the curriculum in the single-service Command and Staff Colleges — in the Air Command and Staff College it constituted around 25% — the control of the curriculum asserted by the Joint Education Division and other agencies was considerable and impossible to ignore or challenge. Themes and topics considered necessary by the Joint Staff tended to reduce or squeeze out others. The Staff’s authority, executed in many cases through officers with little experience in teaching and managing educational programmes, aroused resentment among the colleges’ teaching teams that were forced to modify what they might otherwise have done.

During the late 1980s, the individual service war colleges responded to these pressures, and to their own desire for excellence, by developing far more robust and lengthy programmes dealing with joint issues. However, their application to receive formal accreditation did not always bear fruit. The turning point came when the Department of Defense adopted the recommendation of the Skelton Panel that there should be a two-phase approach to joint education. Joint Professional Military Education Phase 1 would be studied by all the students in service colleges and Joint Professional Military Education phase 2 would be studied only by those graduates of military colleges “en route to assignments as joint specialists”.²⁶ The successful completion of the National War College and the Industrial College of the Armed Forces was set as fulfilling the requirements of both Phase 1 and Phase 2. Responsibility for teaching Phase 2 to graduates of the service

colleges lay with the Armed Forces Staff College (AFSC).²⁷

The influence of the Goldwater-Nichols Act and the Skelton Panel naturally extended to the Air Command and Staff College (ACSC) based within Air University in Montgomery, Alabama. Their direction and recommendations ensured that the academic year of 1988-1989 was the last year with a separate curriculum for officers designated for joint assignments. In the academic year 1989-1990 the school changed not only its curriculum, but also its mission statement so that they would both reflect the move to joint professional military education. In the academic year 1990-1991 this joint education rose in overall proportion by 3% from the previous year to constitute around 47% of the curriculum, and the college was authorised to have “joint professional military education phase 1 accreditation”.²⁸ The curriculum included the five fields that the Joint Staff had considered necessary. These included joint forces and the operational level of war, organisation and command relationships and joint staff operations.²⁹ In addition, the warfighting area of instruction now focused on joint operations from a USAF perspective. These joint courses include the study of Army, Navy, and Marine Corps doctrine and operations.³⁰ The reforms even included a change to the ACSC’s mission statement. It had previously been: “To broaden the knowledge and increase the professional qualifications of future commanders and staff officers, emphasizing combat and combat support operations”. In the academic

year of 1990-1991 the mission statement became: “To produce officers who understand the nature of war, the profession of arms, and the application of aerospace power at the theatre level of war”.³¹

Brigadier General Phillip J. Ford — a former command pilot with a distinguished record who went on to gain a third star³² — was at the ACSC’s helm during this period of transition between 1990 and 1991 and he was undoubtedly adept at change management and enthusiastic about the newly articulated way forward. He believed that the new mission statement that resulted from a major internal review which he oversaw would better express the rigorous, intensive curriculum which placed the weight of emphasis and analysis on warfare at the operational level of war. Ford’s new mission statement reflected his enthusiasm for operational art; an enthusiasm widely held during his peer group in the post-Vietnam era. In response to the Skelton Report, Ford had initiated a major overhaul of the ACSC, and was able to report in April 1991 that, as part of a new ten-year strategic plan (titled “2001”), the ACSC had already initiated actions on 30 of the Skelton Report’s 31 recommendations pertaining to that college.³³ It had begun hiring more PhD-qualified academics and more masterate-qualified military directing staff (and providing better senior mentoring for all new instructors). It had initiated an instructor exchange programme with the Air Force Academy. This long-overdue up-skilling would certainly help. The training of instructors had been rather poor, as one student and later faculty member

recalls: "They were sent to a 2 week instructor course ... where they were given the basics of teaching and lesson planning. Once this was completed they took leave and got an overview of the curriculum. This meant that their major qualification to teach was that they had taken the course as a student."³⁴ Under Ford the ACSC had also added far more lectures on strategy and the strategic process. It began using active and retired three and four-star speakers more frequently, and it was making improvements in the student-faculty ratio.³⁵ Brigadier General James S. Savarda, another command pilot, continued this drive for improvement when he took over from Ford in July 1991.

John Warden and the ACSC

When the "hard-working and serious" Colonel John Warden became the Commandant in August 1992³⁶, his grand reputation and larger-than-life persona completely overshadowed the substantial amount of transitional work already in progress. His biographer, John Andreas Olsen, does not even name Savarda, Ford or any other ACSC Commandant.³⁷ It is as though the ACSC only really began when Warden arrived, despite its invaluable role at critical times during the previous six decades and the improvements already being made by his immediate predecessors. Another of Warden's admirers typifies the adulatory views of this epiphany: "A change agent was desperately needed. That's where Colonel John Warden comes in. He arrives at ACSC in the summer of 1992 with a plan to bring the school out of the past and prepare today's students to

win tomorrow's wars."³⁸ Another of Warden's supporters, who served as a trusted faculty member at the ACSC, later wrote: "I knew that John was not coming to ACSC on anything less than a mission from God."³⁹

According to Olsen, who makes no mention of the work-in-progress, Warden inherited a college best described as a withered institution with few genuine academic accomplishments or aspirations.⁴⁰ Using only two interviews as evidence, Olsen asserts that officers studying at the ACSC generally considered the year as "time out" from operational command and accordingly not especially useful except for the chance to spend more time with families and on networking. Warden himself apparently agrees that this idea of "time out" from real career-related activities was in the minds of many of the students for whom he assumed responsibility.⁴¹ Moreover, according to Olsen, many of the faculty members seemed to have little true interest, if any, in academic issues.

This view may contain a degree of truth regarding students' expectations — flying was more important in terms of promotion than academic interests⁴² — yet it is not entirely fair to the splendid academics who were already on the staff before Warden arrived. As James S. Corum points out: "There were some very competent and well published faculty at ACSC, at least among the civilians, who could easily meet any good university faculty standard. Dr. Rich Muller had just been hired; I believe before Warden came. Lou Ware was writing as a regional expert; highly competent.

Karl Magyar was also well published and involved in teaching pol sci.”⁴³

One of the academics that Corum singles out for praise, the well-regarded and well-published Dr Richard R. Muller, believes that the faculty *was* generally committed. The problem was not lack of personal interest, but lack of collective battle-rhythm intensity. “ACSC faculty duty before Warden arrived,” he believes, “was not especially demanding. If you really wanted to get involved and work hard, the opportunity was there, but it was also possible to get by with doing relatively little work. A joke that was common currency my first year was that the wing of the building housing the [academic] faculty offices was known as ‘The Dark Side’ — early in the afternoon, most of the offices were dark.”⁴⁴

Warden was very fortunate to arrive at the ACSC during this period of comprehensive change within the military education system in the United States. With Skelton’s report asserting that education within all services and at all levels needed to be improved, both substantially and quickly, Warden and other military education heads across the country knew that they would enjoy far more latitude and scope for creativity than they might ordinarily have received. Warden felt ready for the challenge. After many years in command and staff positions, and having read, reflected and even published on airpower theory (including a book celebrated for a time⁴⁵), he believed he knew what the USAF required, and would in future require, of its corps of officers. The USAF was excellent at planning and conducting warfare at the operational level, but it

was not yet especially good (and its officers were not very experienced) at understanding strategy; that is, at coercing and defeating enemies conclusively. In this sense he saw his new post at the ACSC a little differently to Ford and other predecessors, who had accepted a focus on operations and not on strategy. Warden wanted to raise thinking at the ACSC to a higher level; to develop in students the capability to examine problems from a loftier strategic perspective.⁴⁶ He expressed his aspiration in a new vision statement that he gave to the College. The “world-class educational institution,” as he wanted the ACSC to become, would henceforth “educate midcareer officers to develop, advance, and apply air and space power in peace and war”.⁴⁷ Accompanying the vision statement were a set of stated objectives highlighting the importance of freedom of thought, critical thinking and an analytical and creative approach to problem-solving. Interestingly, given his desire to raise horizons, most of these objectives referred not exclusively to the strategic level, but also still to the operational level.⁴⁸

Warden wanted to get stuck in straight away, yet, aware that he first needed to gain “buy-in” from his staff members, who might otherwise dismiss him as an outsider, he made no immediate changes.⁴⁹ Indeed, during the initial half of his first academic year (1992-1993) the curriculum remained unchanged in its traditional focus on the Cold War⁵⁰, which had only just ended to everyone’s surprise.

Warden now recalls this period

differently. He dramatically maintains that he strove to carry out reforms at the ACSC as quickly as possible because he somehow knew he would gain fierce opponents and that he should not give them time to unite. He remembers anticipating opposition from three directions. Senior officers were likely to protest at the strengthening of curriculum requirements and the burden of work that students would have to carry. His faculty would dislike and maybe oppose the changes he wanted made to teaching methods, work culture and study topics. He also maintains that the ACSC students themselves would probably have been angry that, instead of having a relatively easy period of time out, they would have to work hard in a robust academic programme.⁵¹

The truth is probably somewhere between these two versions of events. Warden did want to signal his intent very clearly. He gave introductory speeches in which he revealed his near obsession with campaign planning, and he spoken openly about the raising of standards.⁵² In one of his earliest meetings with the entire faculty shortly after he took command, “he let everyone know that the Cold War was over and that the school needed to change with the times.”⁵³ One of his new academics notes: “I think he had a clear idea of how he wanted to change things, but he made it clear that he would be open to the ideas of others and that everyone would get a hearing.”⁵⁴ Indeed, he brought his staff along quickly but at a measured pace, trying to gain their support and trust at each step and trying not to alienate any to the point of mutiny.

Having an oppositional staff would greatly inhibit him in his aspirations. Warden knew there were naysayers, “but he remained temperate and patient with them and “assumed they would come around eventually; if not, he would gently marginalize them.”⁵⁵ A former School of Advanced Airpower Studies (SAAS) professor agrees with this picture: Warden was “always sincerely friendly. I suppose that he just believed that if we listened to talks on airpower long enough we would all see the light and embrace [his views on] airpower.”⁵⁶ This scholar remembers that Warden was right to work on winning over “the competent civilian academics who might subject his views to some strong academic critique. There was an attitude among some civilian faculty that John was a very bright guy — but no genius — and someone who had a bit of the Billy Mitchell ‘I’ve got the answer’ syndrome.”⁵⁷

Change Agents or “Conspirators”?

The staff members were used to new commandants appearing every eighteen months or so, with almost none of them possessing any real academic experience beyond having been students themselves.⁵⁸ They then tended to disappear before they had accomplished much of their “vision”. A number of Warden’s new team members therefore were, despite their appreciation of his preparedness and enthusiasm, initially wary in case he proved to be yet another commandant who left before finishing the transformation, thus leaving a trail of chaos in his wake.⁵⁹ Warden’s most enthusiastic faculty member was Lt. Col. Larry

Weaver, who already had a connection to his new boss, having been Warden's son's academic advisor at the Air Force Academy.⁶⁰ A recent ACSC graduate, Weaver saw this period as a unique opportunity for change.⁶¹ Even before Warden had arrived, Weaver had written for him a secret memo — he later described it himself as a “leak” — outlining for the incoming head what he perceived needed to be done to fix existing weaknesses.⁶² Soon after Warden's arrival, even while the Vice-Commandant and the Dean (Colonels Payne and Hall) were trying to find the source of the leak, Weaver began to coordinate an informal working group to get changes started and made quickly. Initially it included Richard Muller, Dr Earl Tilford, and Lt. Col. Albert Mitchum and later gained the support of a further eight instructors.⁶³ Weaver believed that the instructor force was the “heart of the revolution,” as he later excitedly described it, drawing strange parallels with the French Revolution.⁶⁴ Weaver later told one of the authors of this article, Tamir Libel, that after Warden had revealed his desire to give the ACSC a shake-up, he told Warden “that every revolution needs a Robespierre ... and that I wanted to serve that function. ... We actually all took names from the French Directory as a type of tribute to forthcoming revolution.”⁶⁵ This group of twelve instructors met often throughout the autumn of 1992 to conceive and design a new Air Campaign Course curriculum that better accorded with Warden's vision and encouraged students and faculty to think far more critically than hitherto about airpower and the planning of air campaigns at the operational level and within the

context of grand strategy.⁶⁶

Frustrated by the fact that “seminar packages” had grown over the years without coherence, with various lectures being added apparently on the whim of whoever happened to teach them in any given year, Warden and his colleagues aimed to do better. They wanted a tight, consistent and focused syllabus that had far more breadth and depth.⁶⁷ They worked hard to develop a challenging new ACSC syllabus of intellectual enrichment with a brand-new Air Campaign Course as its heart that included all key aspects of air power and even space power (then a relatively poorly understood branch of strategy) being taught comprehensively from the highest strategic level right down to the placement of ordnance on targets. Moreover, students would need to read, read and read some more; and it was not only a quantitative issue, but also a qualitative one.⁶⁸ To Warden, “ideas were important.”⁶⁹ Rather than the readings seeming to have been randomly picked by lecturers without much thought on how the individual pieces contributed to the development of a set of weighty critical ideas, henceforth readings would be carefully chosen as mutually supporting bricks that fitted together to construct an edifice of true analytical merit. The team also went beyond the inductive cognition that had traditionally underpinned military education to begin stressing the value of deductive reasoning, all with a view to making students more critical in their thinking and more imaginative in their problem-solving. This was sorely needed, especially as there was still an “Air force culture”

that wanted the Air University and its colleges to be primarily “an ‘advocacy force’ for airpower.”⁷⁰

By bringing this new approach to the study of air power conceptual thinking, Warden planned to imbue the College with a genuinely transformational educational programme. His colleagues toiled intensively during the fall of 1992 to create the Air Campaign Course, and planned to introduce it to the following course; that is, during the fall of 1993. However, after seeing the splendid progress his team had made in a very short period, Warden informed his first cadre of students, just before they left for their Thanksgiving holiday, that in the second semester they would be able to undertake the Air Campaign Course as an option.⁷¹ The students were not the only ones to feel gobsmacked by the lack of lead-in time. So were the staff members. Even Weaver, his most ardent supporter, felt bothered by the fact that, although the new course seemed extremely good, the teaching staff members were not yet fully read into its complexities and ready to commence teaching it. Warden’s rush had another problematical effect. Lecturers would have to cope with a swollen workload because of the fact that, despite the newly inserted option, they would still have to teach the original curriculum at the same time. Surprisingly, given that teaching staff members explained to students that the new Air Campaign Course would demand far more focus and effort, at the end of the holiday 103 out of 580 students began the new course.⁷²

Unusually for a Commandant, Warden

himself gave a significant series of lectures. Less surprisingly, his chosen topic was the strategic and operational levels of war particularly as they pertained to Gulf War I⁷³; the war supposedly won largely because of “his” lauded air campaign. Indeed, Warden’s five-ring model for strategic and operational targeting prioritisation formed the heart of the new course. His biographer insists that Warden did not try to foist his five-rings model onto students as a solution, but presented it only as an example of the type of conceptual thinking that managed to simplify complex strategic issues.⁷⁴ One of Warden’s own friends, Phillip Meilinger, sees it differently, noting that Warden placed a “heavy emphasis — proselytizing would not be too strong a term — on his Rings model as a targeting theory”.⁷⁵ Meilinger’s view is more reasonable than Warden’s biographer’s. It is implausible to believe that students would not have understood that the paradigm presented to them in person by its then-famous “war-winning” architect, who also happened to be their own larger-than-life commandant, was merely a model for their consideration, and not *the* model for their adoption and acceptance. It seems unusual and a little incongruous, given Warden’s own stated desire for critical thinking, scepticism towards what Meilinger calls “entrenched thinking”⁷⁶ and an emancipating learning environment, that he used his powerful position as Commandant to project his own ideas onto students whilst still expecting them to be able to criticise them as robustly and openly as they might challenge or interrogate any other set of ideas. The frequent presence at

the ACSC of some very senior USAF officers — there to provide Warden with the type of top-cover he felt his “revolution” needed⁷⁷ — could only have strengthened the view of some students that the well-connected Warden’s five-ring model was now *their* model.

Some faculty members were less than enthusiastic about Warden’s evangelical emphasis on his own ideas, which struck them “as both questionable in logic and overly mechanistic. Should ACSC teach a theory of war billing itself as *most* relevant in the modern era? Can war possibly be that predictable and formulaic?”⁷⁸ Richard Muller, who remembers that, even before Warden arrived, his reputation as an air power “advocate, and perhaps a bit of a zealot,” had preceded him, recalls that a number of ACSC academics “had intellectual disagreements with the 5 rings and the focus on air campaign planning; the SAAS faculty at the time was among the leading critics. Some argued persuasively that such models were artificial, mechanistic, and of limited utility.”⁷⁹ Indeed, Dr James S. Corum, then an air power academic at the SAAS, remembers that “there was less an interest in fighting John’s changes than in making sure the ACSC did NOT teach the five rings as dogma, and that airpower theories — how airpower wins wars alone — were subjected to some critical tests.”⁸⁰

These issues notwithstanding, and despite the Air Campaign Course causing a few problems for both those students who took it and those who did not, the ACSC received positive feedback overall on the new curriculum. Even aside from

grumbles over the issues mentioned, and complaints about organisational and administrative issues, students seemed to believe that the content and methodology were beneficial and suitable for the education of future air force leaders.⁸¹

Warden and his team (of what even his reverential biographer calls “acolytes”⁸²) continued to change and update the course, and when the class of 1994 began, the curriculum included ten disciplines: professional skills; war, conflict and military missions; military theory; strategic structures; operational structures; campaign concepts; air campaign; campaign termination; future campaigns (beyond 2000); and an end-of-course exercise.⁸³ Some of these topics were brand-new whilst other had been updated according to Warden’s vision. Believing that students should already have gained the rudiments of management by the time they reached the ACSC, Warden changed the focus of the professional skills course and aspects of other courses away from staff work and management and, through revised curricula and readings focused on great commanders, onto the deeper and richer human aspects of leadership, particularly at higher levels. This was not pleasing to everyone. “Some of the military faculty believed that part of ACSC’s mission was to teach the elements of squadron command, and they believed Warden’s campaign-focused approach gave that short shrift. (‘Where’s the ‘Command and Staff’ in Air Command and Staff College?’ was a comment sometimes heard in the halls.)”⁸⁴ Richard Muller recalls “one faculty member who I

greatly respected — he was a former commander, a great teacher, and in general a stand-up guy ... thought Warden was on the wrong track, and left ACSC.”⁸⁵ Phillip Meilinger, who was Dean at the SAAS (and in fact the real dynamo of creative American air power thinking during the period) while Warden was Commandant of the ACSC, highlights the central issue of the disconnection between professional development and preparation and pure education:

*I always viewed SAAS and for that matter ACSC and AWC as ‘professional schools,’ not academic ones. The mission of the typical academic college is to train and educate the mind. A professional school — like a law or medical school — is actually focusing on turning out people who will PRACTICE what they learn in school. Same with a war/staff college. I think it's a different focus and distinction but an important one.*⁸⁶

Warden not only kept his grasp firmly on the curriculum, but he also continued to teach far more often than predecessors (some of whom had never taught) and always, almost evangelically, with his own five-rings model as the centrepiece of his ideas. Warden’s response to criticism from his staff or students was often to agree that his paradigm might be imperfect, but to remind his critics that it “offered a conceptual starting point; it was up to the critics to offer a better alternative.” He had a point; “unlike [OODA Loop pioneer] John Boyd, Warden put down some key ideas on paper which could be examined and debated on their merits.”⁸⁷ He also lectured occasionally at the SAAS, where he was personally very well liked.⁸⁸ After one lecture “he was asked how

one could apply the 5 rings or an air campaign to a non-state enemy — insurgent or terrorist group — one that had no strategic targets, fielded forces, key infrastructure and hid among the population. How did one defeat these types of enemy with airpower? He replied airily, ‘Oh, we won't fight those kinds of wars.’ Some of the SAAS faculty thought it was pretty neat that a USAF colonel got to decide who America might fight and whether we would go to war.”⁸⁹ Warden also used to give his rings briefing to ACSC visitors and, Meilinger notes, “of course he was masterful at explaining it all and leaving his guests wide-eyed.” On the other hand, “when he wasn't around ... one of the other colonels had to give his briefing. Ouch. I remember commenting at the time that it was like the frontier town on a movie set. Looks good on main street, but please don't open any of the doors [in other words, don't probe the speaker] cuz there ain't nothing beyond those doors but prairie.”⁹⁰

Warden felt critical of the research skills that the ACSC students had demonstrated during his first year, so he put his effort into raising their game. Basing his approach on his own Pentagon, Gulf War planning team and White House experiences — in which collaborative intellectual effort including “brainstorming” proved more important than individual effort — he took a dim view of the traditional personal research papers on which the students had always worked all year and which were, he thought, judged mainly on style, structure and scholarly paraphernalia.⁹¹ Students should also research and write

projects in teams of twelve or so.⁹² This was, after all, probably going to be how they would work when they joined staff and planning teams later in their careers. Few would do independent research.⁹³ He had his former colleagues throughout the USAF propose new research topics and he even had some student research groups undertake classified projects for the Chief of the Air Staff.⁹⁴ Although this approach sounds impressive, the results were not always successful. One Maxwell academic who served as an external evaluator, and remains critical of this novel team-research methodology, recalls:

Warden believed that if you got a group of USAF officers together — with no real professional advising, no real academic background — those Air Force officers would come up with something brilliant. He had a huge budget, far beyond what the Army or USMC ever had for students. [In this fashion] he [thought he] was going to revolutionize military thinking by this student research.⁹⁵

This critic lamented the results of Warden's experiment. They were, in his view, "pure farce." Dominant group members (who were not necessarily the most intelligent) tended to thrust their personalities upon the group and lead them not only to follow some illogical methodological practices but also to develop weak arguments and to reach unsustainable conclusions. "In short," the critic writes, "a group of unsupervised Air Force officers came up with AWFUL research." This opinion is an individual view, and should not therefore be treated as authoritative. Yet it does reveal that, for all his impressive qualities,

Warden, who was inexperienced in pedagogy but keen to have his student do things they way he did, did not get everything right all of the time. One of Warden's academics, Richard Muller, agrees, recalling that "the research program was not one of Warden's most successful initiatives." While agreeing that "there were some abysmal group projects," he is nonetheless not as dismissive as our first commentator.⁹⁶ Muller notes that some of the projects were in fact "quite worthy" and adds:

One also cannot ignore the educational benefit these students gained from the process. Even if their final written projects fell short, I think we helped the students develop critical thinking and writing skills. One ACSC student I recall developed an interest in military history as a result of his research project, joined the ACSC faculty, was selected to pursue a doctorate at a civilian university, and eventually came back to ACSC as the Dean.⁹⁷

As it happened, the experimental group-research projects did not long survive Warden's tenure. Some group projects (usually Chief of Staff directed studies) are still undertaken at the ACSC, but most students today either take an elective class with an associated research project or conduct individual research with a faculty advisor.⁹⁸

Warden and his colleagues continued to press students to read far more. They also secured funding — actually on such a vast scale that he faced accusation of wasting taxpayers' money⁹⁹ — for the College to give students sets of books that would belong to them and form the core of their personal libraries. These

included novellas and science fiction works intended to encourage students to think about unusual, distant problems.¹⁰⁰ Clearly to those who thought he was wasting money, science fiction must have seemed bizarre. He reacted to criticism by saying that his book budget was much less than a one-hour training exercise in an F-15.¹⁰¹ All this reading came with what some observers saw as another cost. Because of their awareness that reading and valuable reflection were vastly time-consuming, the team reduced the amount of time that students would spend in the classroom each week. Many of the veteran faculty members shook their heads or even opposed this change¹⁰², yet Warden brushed aside their concerns and ring-fenced reading time by keeping classroom hours to what he called the right amount. This did not make the course easier. He correspondingly increased the amount of homework students would have to do.¹⁰³

Warden also modified the faculty departmental structure. Curriculum development shops (which were aligned along single-disciplinary lines) developed lesson materials. Then, different groups of faculty instructors went into the classrooms to present the material developed by others or (more usually) to oversee the students presenting the material to each other. Wanting to increase his instructors' inter-disciplinary expertise and strengthen their commitment to each other¹⁰⁴, Warden got rid of this system. The faculty members assigned to each multi-disciplinary department (then called a "beam") henceforth both developed and taught their own material. Richard

Muller notes that "this was a sea change in how the school did business".¹⁰⁵ He adds:

At ACSC today, however, the departments are organized more or less along disciplinary lines (This realignment took place in 1999.). This was a natural prerequisite for getting the school's program accredited, as faculty expertise in the subject matter had to be demonstrated. This made for a more credible faculty, but it is true that some of the interdisciplinary benefit was lost. I, for example, benefited greatly from teaching air campaign planning for a number of years.

The technophilic Warden initiated or approved other changes that had a significant and lasting impact on the college. He wanted students to master computer technology and to gain benefit from them. Supported enthusiastically by his boss, Lieutenant General Jay W. Kelley, Commandant of Air University and Director of Education, Air Education and Training Command, he managed to secure an unprecedented amount of money (four-and-a-half million dollars, in addition to the book money¹⁰⁶) for computers and a local network upon which students could gather information, undertake joint activities and even run wargames. Shortly thereafter each ACSC student benefitted from a personal laptop and other computers were available throughout the college.¹⁰⁷

Short-term Reforms or Lasting Legacy?

Warden's successor as ACSC Commandant in August 1995, Colonel (later Major General) John W. Brooks, was not intimidated by Warden's reputation or compelled slavishly

to follow the direction that he had taken. When he learned that Warden wanted to appoint his old mate T.K. Kearney as Dean of the ACSC faculty just before he retired, Brooks saw this as Warden trying to put in place a supporter who would control the curriculum and prevent any changes. Brooks therefore told Warden not to try appointing Kearney. "John reportedly answered that he was still Commandant and he could appoint him if he wanted to. Brooks said, yes you can, but I'll fire him the first day I take over, so let's not embarrass T.K. in front of everybody."¹⁰⁸ Warden backed down. Even if this story and the inter-personal issues within it are impossible to verify, its existence testifies to Brooks' independence and desire to do things his own way.¹⁰⁹ "Brooks was a very smart guy," Phillip Meilinger recalls, who was "later a two-star and could have gone much higher but he had a very sick wife so chose to retire and reduce his work load." Meilinger remembers Brooks agreeing to keep many of the constructive changes that Warden had made, whilst also shifting the emphasis back towards the ACSC's customary role as a centre of excellence for the preparation of staff officers who could actually do staff work: "He came up with a clever device for describing the mission of ACSC: A is for Air; that's what we focus on here; C is for Command because we teach leadership; S is for Staff because we also teach you admin and how to be capable staff officers at a major headquarters; and C is for College, because we are an academic institution that takes study and ideas seriously."¹¹⁰

To re-orient the ACSC on what he

believed should have been its key mission — preparing leaders for senior staff posts — Brooks reduced the centrality of Warden's beloved Air Campaign Course within the curriculum and even decreased the number of hours it contained.¹¹¹ Brooks also felt bothered by Warden's experimental group-research projects, seeing in them the same flaws as those mentioned above. He scrapped them, returning research to an individual activity.¹¹² He valued research, but did not want to see that become a dominant focus of the ACSC, must less have the college morph into something like the RAND Corporation¹¹³ (to which James Corum quips: "given the low quality of the research, that was NOT a problem"¹¹⁴). Brooks also found himself part of a pattern in Warden's life: like others who had succeeded Warden in various posts throughout his career, he found that Warden, despite his quick mind and success at challenging established ideas, was not a starter-finisher. He left many unfinished tasks for Brooks to finish and several ad hoc systems to regularise.¹¹⁵ That is, of course, typical of those with creative intellects. They have bright ideas and devote tremendous, almost frenetic energy into making them happen, but they do not always spot any flaws in them and they seldom fully appreciate the turbulence they cause for those around them. Nonetheless, in Warden's case we should not mistake turbulence for resentment or even dissatisfaction (although there were clearly pockets of both during Warden's tenure). As Richard Muller writes:

I found him to be a very inspiring leader.

He had an exciting, dynamic vision for the school and made it clear that there was a part for everyone who wanted to "play." I remember the department I was assigned to at the time, War Theory and Campaign Studies, had very high morale — in spite of the long hours and hard work required to build and teach the new curriculum. T-shirts extolling "The Dead Theorists Society" and "John Warden and his Campaign Orchestra Road Crew" were often to be seen at social events. Those of us who really wanted to raise the bar at ACSC found the whole thing very exciting, and we moved forward with a great sense of unity and purpose.

Warden himself now very humbly acknowledges that his own single-service focus and enthusiasm, and his relative lack of interest in communicating his concepts outside of the USAF and other air forces, may have reduced the breadth of the ideas' influence in wider military circles. Because first and foremost he wanted airmen to know *their* business, he was not as joint as he probably should have been. He actually then believed that the burst of recent national interest in jointness had created a bureaucratic unwieldiness, shallow theoretical publications and decreased freedom of thought and creativity in the services.¹¹⁶ He therefore saw little importance in greater interaction with his peers in the other service command and staff colleges.¹¹⁷ This lack of interaction naturally meant that his own students were not gaining much exposure to emerging ideas from outside the USAF. At that time the US Navy probably had the best quality programs from an academic perspective. The Naval War College and its postgraduate

school were doing some excellent creative thinking, perhaps the most academically robust of all the service college, and the Marines and the Army were themselves becoming more robust than ever. Enhanced dialogue might have borne fruit for everyone.

To be fair to Warden, his obsession with getting airmen to think about air power *may* have come at a cost in terms of their joint conceptual thinking — although even this observation cannot be more than conjectural — but it did add tremendous impetus to the renaissance in air power thinking that he, Phillip Meilinger and others kicked off. His own ideas remained at the heart of that renaissance for at least a decade and, even though they have ceased to be central (at least explicitly during discussions), they prompted weighty analysis by other thinkers that has greatly enhanced philosophical, conceptual and doctrinal approaches to air warfighting. Yes, Warden did push his ideas with missionary zeal whilst Commandant of the ACSC, but his motive for doing so grew not from egotism (even though he was prone to accusations of self-absorption and hubris¹¹⁸), but from an acute, genuine and well-founded concern that he needed to get airmen thinking about air power and united in that process. He once commented to Phillip Meilinger that "he DID want a single air targeting theory to be taught at ACSC," in much the same way that between the world wars the Air Corps Tactical School (ACTS) had taught industrial web theory. When Meilinger replied that the ACTS had been "more wrong than right," Warden replied, quite reasonably,

that he would rather have people on the same page with something that might not be perfect than have the “chaos of everyone coming up with their own theory of airpower.”¹¹⁹ His advocacy should in fairness be seen in this light.

Concluding Thoughts

It is difficult to make any conclusive determination of whether Warden’s tenure as Commandant of the Air Command and Staff College had lasting influence within the USAF and, if it did have, whether that influence proved especially important in the long run. Such things are hard to measure. Certainly many of his organisation and curriculum modifications were further changed or even undone by his successors. Yet it is hard to deny that Warden’s desire for change, which by serendipity coincided with a wave of transformational empowerment flowing from the Goldwater-Nichols Act and the Skelton Report, had a seismic effect at the ACSC and that, for all the faults of his approach, the ACSC increased in energy, credibility and effectiveness. Warden may have been a zealot and a maverick — it is the opinion of almost everyone interviewed for this article and indeed also for Olsen’s biography — yet he did see his air force as a professional body and its officers as professionals. He took very seriously the notion that the professionals in his stewardship needed to master a distinct body of knowledge, and to form sound judgments derived from it, so that these might serve as the foundation of their practical skills (the application of air power at the operational and strategic levels). And even if we can today

see weaknesses in Warden’s own concepts, which he hoped would serve as a central core of their knowledge, he did enthusiastically and sincerely work to ensure that they understood it, internalised it and were able to discuss and debate it. His criticism that the ideas which previously dominated the ACSC had been relevant primarily to the Cold War, and were therefore at least partly anachronistic, is ironically true in terms of his own five-rings model, which has more utility in inter-state conflict than it does in intra-state conflict of the type that has sapped American and coalition energy since 2003. Yet it was not unreasonable in the early to mid-1990s to try to articulate a set of concepts which then seemed applicable to the strategic context and which would serve as a unifying body of knowledge for airmen operating as a professional body within that context. Warden’s time at the ACSC fortuitously overlapped for a while that of Phillip Meilinger at the SAAS, which organisationally actually came under the ACSC at the time.¹²⁰ These two men saw the world, and air power, in fairly similar terms and, despite their very different styles and methods, together they made commendable strides in getting the rather elephantine USAF to think more (and more conceptually) about its nature, purpose and aspirations. Exaggeration must be avoided. In terms of change, their strides were small. Pushing the elephant far or fast was always going to be an impossible task. Yet they contributed to, and may even have kicked off, a period of blossoming in air power thought, one that spread internationally and left a distinct

mark on professional air power education. Warden's book, his fame as a Gulf War I planner and even his governance of the ACSC are still discussed and seldom ignored by scholars who chronicle the evolution of air power. The ideal quote with which to conclude this article is thus a pithy observation from Richard Muller: "My bottom line on Warden: His ideas were not perfect. His methods sometimes created turbulence. But he was exactly what ACSC needed at that time. I would not trade those three years I spent working for him for anything."¹²¹

Notes

¹ Some of Dr Tamir Libel's preparation for this jointly researched article occurred during the writing of a doctoral dissertation supervised by Professor Stuart A. Cohen at the Department of Political Studies in Bar-Ilan University, Israel.

² David R. Mets, *The Air Campaign: John Warden and the Classical Airpower Theorists* (Maxwell AFB: Air University Press, 1998. Revised edition 1999), p. 58.

³ An excellent starting point for readers interested in this topic is Matthew R. H. Uttley, "The Air Power Profession: Adaptations to Continuity and Change in the Strategic Environment, in Joel Hayward, ed., *Air Power, Insurgency and the "War on Terror"* (Royal Air Force Centre for Air Power Studies, 2009), pp. 21-28.

⁴ Cathy Downes, "To Be or Not To Be a Profession: The Military Case," *Defense Analysis*, Vol. 1, No. 3 (1985), p. 148.

⁵ Samuel P. Huntington, *The Soldier and the State: The Theory and Politics of Civil Military Relations* (Cambridge: Harvard University Press, 1957), p. 11.

⁶ Gwyn Harries-Jenkins, "The

Concept of Military Professionalism," *Defense Analysis*, Vol. 6, No. 2 (1990), pp.120- 121.

⁷ *Ibid.*, p. 120.

⁸ Marina Nuciari, "Rethinking the Military Profession: Models of Change Compared," *Current Sociology*, Vol. 42, No. 3 (1994), pp.7- 8.

⁹ Don M. Snider and Gayle L. Watkins, "Introduction", in Don M. Snider, Gayle L. Watkins and Lloyd J. Mathews, eds., *The Future of the Army Profession* (Boston: McGraw- Hill, 2002), pp.7- 9.

¹⁰ James J. Tritten, *Naval Perspectives for Military Doctrine Development* (Norfolk: Naval Doctrine Command, 1994), pp.1- 2.

¹¹ James J. Tritten, *Lessons and Conclusions from the History of Naval and Military Doctrinal Development* (Norfolk: Naval Doctrine Command, 1995), p.4.

¹² Tritten, *Naval Perspectives*, p. 3.

¹³ Tritten, *Lessons and*, pp. 16-17.

¹⁴ Tritten, *Naval Perspectives*, p. 14.

¹⁵ John W. Masland and Laurence I. Radway, *Soldiers and Scholars: Military Education and National Policy* (Princeton: Princeton University Press, 1957), p. 55; Michael Evans, *From the Long Peace to the Long War: Armed Conflict and Military Education and Training in the 21st Century* (Canberra: Australian Defence College, 2007).

¹⁶ Phillip S. Meilinger's written comments to Joel Hayward, 7 September 2010. The authors of this article are naturally mindful that individuals not only perceive things differently, but that they also remember them differently. Given that this article draws upon the memories of several former faculty members, who are looking back on the events under discussion after almost twenty

years — two decades in which their own experiences have differed, as have their levels of contact with each other and with John Warden — this article highlights many of the challenges faced by historians when using information gained from participants' interviews. Complex issues of objectivity and bias are compounded by the malleability and fallibility of the human memory. That is not to say that our interviews have added little or are unreliable. On the contrary, they have enriched our analysis beyond measure and, so long as readers understand the thorny issues mentioned above, they provide invaluable information and colour.

¹⁷ Martin van Creveld, *The Training of Officers* (New York: Free Press, 1990), pp. 81, 87.

¹⁸ *Ibid.*, pp. 81- 82.

¹⁹ <https://digitalndulibrary.ndu.edu/cdm4/document.php?CISOROOT=/goldwater&CISOPTR=956&CISOSH OW=869>

²⁰ §661 (c).

²¹ §663 (b) & (c); John A. Brewster, *Time to Overhaul the United States Air Force's Air Command and Staff College* (Research Report, Air Command and Staff College, 2006), p. 2.

²² *Report of the Panel on Military Education of the One Hundredth Congress of the Committee on Armed Services, House of Representatives, One Hundred First Congress, First Session* (US GPO, 1989). Hereafter cited as Skelton Report. Available online at: <https://digitalndulibrary.ndu.edu/cdm4/document.php?CISOROOT=/nduldpub&CISOPTR=4418&CISOS HOW=4211>

²³ Brewster, p. 2.

²⁴ *Ibid.*, p. 4; Christopher A. Feyedelem, *It's Time to Rethink JPME II* (Research Paper, Naval War College,

2004), p. 2.

²⁵ Thomas. A. Keaney, "The War Colleges and Joint Education in the United States," in Gregory C. Kennedy and Keith Nielson, eds., *Military Education: Past, Present and Future* (Westport: Praeger 2002), p. 158.

²⁶ Skelton Report, p. 4.

²⁷ *Ibid.*, pp. 3-4. The AFSC was later renamed the Joint Forces Staff College.

²⁸ United States General Accounting Office, *Air Force: Status of Recommendations on Officers' Professional Military Education*. NSIAD-91-122BR (Washington, DC: GAO, National Security and International Affairs Division, March 1991), p. 17.

²⁹ *Ibid.*, pp. 16-17.

³⁰ *Ibid.*, p. 17.

³¹ *Professional Military Education: Hearings before the Military Education Panel of the Committee on Armed Services, House of Representatives, One Hundred Second Congress: First Session: Hearings Held February 5, April 17, 24, September 18, November 1, 5, and December 16, 1991*, p. 144.

³² <http://www.af.mil/information/bios/bio.asp?bioID=5437>

³³ Brigadier General Phillip J. Ford, Personal Testimony, 24 April 1991, *Hearings before the Military Education Panel*, p. 107.

³⁴ Larry Weaver's written comments to Tamir Libel, 18 August 2010.

³⁵ Brigadier General Phillip J. Ford, Prepared Statement, 24 April 1991, *ibid.*

³⁶ Mets, p. 58.

³⁷ John Andreas Olsen, *John Warden and the Renaissance of American Air Power* (Dulles: Potomac, 2007), p. 251.

³⁸ Stephen L. Butler, *Toward the Twenty-First Century: Air Command and Staff College Curriculum from Theory to Practice* (Research Report, Auburn

University, 1995), p. 3.

³⁹ Larry Weaver's written comments to Tamir Libel, 18 August 2010.

⁴⁰ Olsen, p. 251.

⁴¹ Tamir Libel interview with John Warden at the "Air Power and Strategy: Challenges for the 21st Century" conference held at the Joint Services Command and Staff College, UK, on 12 and 13 June 2008 (hereafter cited as "Tamir Libel Interview with John Warden").

⁴² James S. Corum's written comments to Joel Hayward, 4 September 2010.

⁴³ Ibid.

⁴⁴ Richard Muller's written comments to Joel Hayward, 5 September 2010.

⁴⁵ John A. Warden III, *The Air Campaign: Planning for Combat* (Washington, D.C.: National Defense University Press, 1988).

⁴⁶ Tamir Libel Interview with John Warden.

⁴⁷ Stephen L. Butler, *Toward the Twenty-First Century: Air Command and Staff College Curriculum from Theory to Practice* (Auburn University, 1995), p. 3.

⁴⁸ Ibid., p. 21.

⁴⁹ Ibid., p. 3.

⁵⁰ Ibid.

⁵¹ Tamir Libel Interview with John Warden.

⁵² Olsen, p. 253.

⁵³ Richard Muller's written comments to Joel Hayward, 5 September 2010.

⁵⁴ Ibid.

⁵⁵ Ibid.

⁵⁶ James S. Corum's written comments to Joel Hayward, 5 September 2010.

⁵⁷ Ibid.

⁵⁸ Dennis M. Drew, "Educating Air Force Officers: Observations after 20 Years at Air University," *Airpower Journal*, Vol. 11, No. 2 (Summer 1997),

pp. 37-44.

⁵⁹ Olsen, p. 253.

⁶⁰ Larry Weaver's written comments to Tamir Libel, 18 August 2010.

⁶¹ P. Mason Carpenter and George T. McClain, "Air Command and Staff College Air Campaign Course: The Air Corps Tactical School Reborn?" *Airpower Journal*, Vol. 7, No. 3 (Fall 1993), pp. 72-83.

⁶² Larry Weaver's written comments to Tamir Libel, 18 August 2010.

⁶³ Olsen, p. 253.

⁶⁴ Ibid.

⁶⁵ Larry Weaver's written comments to Tamir Libel, 18 August 2010.

⁶⁶ Olsen, p. 253; Carpenter and McClain, endnote 13.

⁶⁷ Olsen, pp. 252-253.

⁶⁸ Phillip S. Meilinger, "Dog Days for the Air Force: What's Wrong and How It Can Be Fixed" (unpublished manuscript, 2005), p. 287.

⁶⁹ Ibid; Mets, p. 58.

⁷⁰ James S. Corum's written comments to Joel Hayward, 4 September 2010.

⁷¹ Olsen, p. 255.

⁷² Ibid.

⁷³ Ibid., pp. 254-255.

⁷⁴ Ibid., p. 256.

⁷⁵ Meilinger, "Dog Days," p. 287.

⁷⁶ Ibid.

⁷⁷ Tamir Libel Interview with John Warden.

⁷⁸ Meilinger, "Dog Days," p. 287.

⁷⁹ Richard Muller's written comments to Joel Hayward, 5 September 2010.

⁸⁰ James S. Corum's written comments to Joel Hayward, 4 September 2010.

⁸¹ Olsen, p. 257.

⁸² Ibid., p. 258.

⁸³ Ibid.

⁸⁴ Richard Muller's written comments to Joel Hayward, 5 September 2010.

⁸⁵ Ibid.

⁸⁶ Phillip S. Meilinger's written comments to Joel Hayward, 7 September 2010.

⁸⁷ Richard Muller's written comments to Joel Hayward, 5 September 2010.

⁸⁸ James S. Corum's written comments to Joel Hayward, 5 September 2010.

⁸⁹ Ibid.

⁹⁰ Phillip S. Meilinger's written comments to Joel Hayward, 7 September 2010.

⁹¹ Olsen, pp. 260-262; Tamir Libel Interview with John Warden.

⁹² James S. Corum's written comments to Joel Hayward, 4 September 2010.

⁹³ Richard Muller's written comments to Joel Hayward, 5 September 2010.

⁹⁴ Olsen, p. 261; Tamir Libel Interview with John Warden.

⁹⁵ James S. Corum's written comments to Joel Hayward, 4 September 2010.

⁹⁶ Richard Muller's written comments to Joel Hayward, 5 September 2010.

⁹⁷ Ibid.

⁹⁸ Ibid.

⁹⁹ James S. Corum's written comments to Joel Hayward, 4 September 2010.

¹⁰⁰ Tamir Libel Interview with John Warden.

¹⁰¹ Olsen, p. 260.

¹⁰² Ibid.

¹⁰³ Tamir Libel Interview with John Warden.

¹⁰⁴ Tamir Libel Interview with John Warden.

¹⁰⁵ Richard Muller's written comments to Joel Hayward, 10 September 2010.

¹⁰⁶ Olsen, p. 261.

¹⁰⁷ Ibid.

¹⁰⁸ Phillip S. Meilinger's written comments to Joel Hayward, 7 and 11 September 2010.

¹⁰⁹ In an email to Joel Hayward date 10 September, Maj. Gen. John Brooks confirmed the story but asked for his own comments on the matter not to be quoted. His request is respected.

¹¹⁰ Phillip S. Meilinger's written comments to Joel Hayward, 7 September 2010.

¹¹¹ Olsen, p. 265.

¹¹² Ibid.

¹¹³ Ibid.

¹¹⁴ James S. Corum's written comments to Joel Hayward, 4 September 2010.

¹¹⁵ Olsen, p. 264.

¹¹⁶ Tamir Libel Interview with John Warden.

¹¹⁷ Ibid.

¹¹⁸ Olsen, p. 264.

¹¹⁹ Phillip S. Meilinger's written comments to Joel Hayward, 10 September 2010.

¹²⁰ For the significant influence of the SAAS, now the SAASS (with Space added), see Tamir Libel and Joel Hayward, "Adding Brain to Brawn: The School of Advanced Air and Space Studies and its Impact on Air Power Thinking," *Air Power Review*, Vol. 13, No. 2 (Summer 2010), pp. 69-80. Available online from the website of the Royal Air Force Centre of Air Power Studies: <http://www.airpowerstudies.co.uk>

¹²¹ Richard Muller's written comments to Joel Hayward, 5 September 2010.

Strategic Paralysis in Irregular Warfare

By Lieutenant Colonel (Ret'd) Richard Newton

In 1995, Col John Warden's article, 'The Enemy as a System', introduced the 5-Ring model for strategic thinking. The model, sometimes referred to as 'Warden's Rings', provides a worthy framework for practitioners and students of strategy and campaign planning. The effect Warden advocated was 'strategic paralysis', i.e., rendering an adversary impotent by eliminating or neutralising the control and decision-making apparatus. Strategic paralysis in Warden's concept is achieved by focusing on the singular element controlling all necessary functions of the opponent's war-making capacity—the leadership and requisite command and control systems. Although, the 5-Ring model was originally developed for conventional-regular opponents and industrial, interstate warfare, this article contends that Warden's Rings also offer an effective model to be applied in the context of modern *irregular* warfare?

The conventional-regular warfare military planners focused on in 1995 has since given way to planning for and fighting multiple wars of irregular character, or *war amongst the people*. The strategic effect intended by the 5-Rings perspective, eliminating or neutralising the control and decision-making apparatus, however, remains as valid in irregular warfare as it is in a conventional-regular context. When unable to directly target the adversary's leadership (commander, sovereign, chief executive, etc), strategic paralysis can still be achieved by operations, both non-kinetic and kinetic, in the four outer rings of the model. The indirect approach to strategic paralysis becomes more difficult and takes more time the further one moves away from the centre of the model. Therefore, strategic paralysis in irregular warfare requires a composite approach; direct actions focused on neutralising the leadership/decision-makers—the adversary centre of gravity, and indirect actions in the outer rings to isolate, marginalise, and discredit the adversary leadership.

Introduction

In 1988, Col John Warden, III, published the book he is best known for, *The Air Campaign: Planning for Combat*.¹ This book established Warden's reputation as an air power theorist, some suggesting him to be on par with the classic airpower theorists; Giulio Douhet, Hugh Trenchard, and Billy Mitchell.² In 1995, Warden followed up his book with in an article for the U.S. Air Force's professional magazine, the *Airpower Journal*. In that article, 'The Enemy as a System', he introduced the 5-Ring model for strategic thinking. It is this model, sometimes referred to as 'Warden's Rings', for which he is most known among military students and planners. The concept of Warden's Rings, so simple on the surface, provides a worthy framework for practitioners and students of strategy and campaign planning—inherently complex processes.

Warden's study of modern state-versus-state warfare, especially those since the inclusion of the aeroplane as an instrument of war, led him to place the leadership element, that entity which holds the decision-making authority to continue or to cease the fighting, at the centre of the rings. The basis for placing the leadership at the centre was Warden's interpretation of the Clausewitzian concept of centre of gravity and how one might attack (or affect) the enemy 'system' in order to achieve the desired strategic results. The bottom line is that Warden's 5-Ring model works, although it has been criticised (unfairly) as being a tool for only planning conventional-regular warfare, or what Sir Rupert Smith

called *interstate industrial war*.³

The world has changed since Warden wrote his book and subsequent article. The NATO allies are no longer facing the Soviet Union and the Warsaw Pact. Planning and preparing for conventional-regular warfare has given way to planning for and fighting wars of irregular character, or *war amongst the people*. Even with the prospective threats of a resurgent Russia and an aggressive China looming on the near horizon, Western nations have become embroiled in ideologically-driven irregular conflicts on nearly every continent. They have little choice, politically, socially, or militarily, but to fight and win these wars they are in. The question this article asks is if planning tools such as the 5-Ring model have become irrelevant in an era characterised by serial irregular wars? One would hope not and that thinking, adaptive planners would apply useful tools, old or new, to help solve the situation at hand.

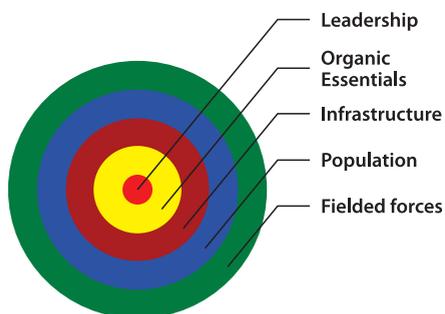
It does not matter if the 5-Ring model was designed with conventional-regular warfare in mind. The campaign planner must still discern the best way to achieve the desired strategic and operational-level objectives. Most importantly, however, what is common to warfare, whether conventional-regular or irregular, is that it is the leadership who decides whether to continue fighting or to negotiate an end to the conflict. There are many factors which influence the leaders' decisions, but in the end it is the leaders who decide. Military strategy and planning are about resolving the conflict and securing a peace. The 5-Ring model is a useful framework

for thinking about and planning the best way to influence the opposing leaders' decisions.

Warden's 5-Rings

Before beginning, it is helpful to review exactly what John Warden proposed. First of all, he suggested that successful campaign planners, operational artists, and strategic thinkers should approach strategic military problems using a deductive approach. That is, they ought to take a top-down, or a strategy-to-task, perspective. The planner's ability to see an entire problem and then break that problem down into constituent parts, continuing through multiple iterations of analysis and results until one arrives at the tactical-level tasks to be assigned to the various components of a joint force, is the essence of successful campaign planning. The 5-Ring model helps planners visualise the enemy as a comprehensive problem set and then provides a vector towards a reasonable solution.

Warden's experiences and training as a modern airman caused him to look at strategy and planning from the perspective of one who finally possessed effective and reliable weapons able to directly strike at the enemy decision-makers or to affect the leadership through



actions, both kinetic and non-kinetic, against targets in the outer rings.⁴ The 5-Ring model was grudgingly accepted by land-centric planners who witnessed the efficacy of airpower during the Gulf Wars in 1991 and 2003. But the model was correct—slogging through enemy forces (the outer ring) that were defending critical capabilities and critical requirements takes time and was a costly way of affecting the enemy decision makers. Likewise, actions focused at the civilian populace (fourth ring) were time-consuming and thus an inefficient way to influence the decision-makers. Warden also recognised that kinetic actions against civilians usually yielded negative long-term political results, the opposite of the end-state desired. Sadly, much of Warden's theory was lost in the emotional bickering of single-Service solutions to national security.

The second thing Warden did was renew the systems approach to strategic thinking. It is suggested that Warden's contribution was a renewal because the critical thinking skills necessary for planning conventional-regular campaigns had been largely lost during the 'vacuum era' of strategic thinking brought about by the near-singular focus on nuclear planning during much of the Cold War.⁵ Systems-oriented thinking about warfare was not new. In fact, it was exactly the methodology used 50 years earlier by the faculty at the U.S. Army's Air Corps Tactical School when they began thinking about and planning for the future utility of the aeroplane in the aftermath of the First World War.⁶ They, like Warden, looked at the enemy as a system of

interdependent, functioning entities, each with its own internal processes and subordinate groupings. Their theory was that clever planners could discover, through detailed analysis of the individual entities and the system as a whole, alternative paths to achieve the same strategic-level effect—defeating the opponent.

The effect Warden advocated was ‘strategic paralysis’, i.e., rendering an adversary impotent by eliminating or neutralising the control and decision-making apparatus.⁷ In ‘The Enemy as a System’, he used a biological example to illustrate his point; the brain, the organ which controls all other processes, tasks, and sub-systems that make up a functioning human, should be the focus for attacking the body. If an adversary takes out or isolates the ‘brain’, then the rest of the ‘body’ may be functioning, but it is not acting as a human. Strategic paralysis in Warden’s concept is achieved by focusing on the singular element controlling all necessary functions of the opponent’s war-making capacity—the leadership and requisite command and control systems.

Warden recognised that it was not always possible, nor desirable, to directly attack the leadership element (sovereign, commander, chief executive). When that is the case, he recommended planners shift their efforts to the second ring, those organic essentials (energy (electricity, fuel, water, factories) and money) necessary for a nation to continue fighting. As Warden assessed how one might create a strategic effect against an opponent, he developed categories that offered classes of

targets against which effects might be applied. These categories became the rings emanating outward from the centre. Warden’s theory proposed that the farther one moved away from the bulls-eye/centre, the leadership or decision-making element, the more difficult it would be and the longer it would take to achieve the desired strategic effect—convince the enemy decision-maker to cease fighting.

As was said earlier, the 5-Ring model was developed for planners looking at a conventional-regular opponent and industrial, interstate warfare. In that context the model makes great strategic and operational-level sense; the adversary is primarily military and kinetic solutions predominate. But irregular warfare is political first and is requires a great deal of attention be paid to effects on the enemy population. The concept of strategic paralysis is still a valid concept for irregular warfare, and therefore the 5-Ring model has value. The question is, then, how might Warden’s work be applied to the context of modern *irregular* warfare?

The Character of Irregular Warfare

Clausewitz was not a fan of irregular warfare; he dubbed it ‘legalised anarchy’.⁸ As an observer and chronicler of Frederick the Great and Napoleon, Clausewitz wrote about the nature of warfare between nations. If one agrees with Rupert Smith that war between nations, ‘interstate industrial war’, no longer exists then further reading of Clausewitz might well be irrelevant. Colin Gray, however, contends that the nature of war has not changed and ‘since all war has the same nature, it matters not whether it is

regular or irregular'.⁹ Therefore, this author contends that *On War* is still relevant and concepts such as centre of gravity are still valuable.

Clausewitz' treatment of irregular warfare, 'The People in Arms', is only 5 of the 600+ pages in the Howard and Paret translation of *On War*.¹⁰ In this short chapter he admits the treatment of irregular warfare is 'less an objective analysis than a groping for the truth'. But, it is not Clausewitz' inadequate discussion of irregular warfare that is of value to modern campaign planners and strategists. Rather, it is because our doctrine, policies, strategies, and jargon tend towards the Clausewitzian, and the fact that the early books in the tome (and the ones considered by many to be the most important), were about the nature of war rather than the character of warfare, that thoughtful students and practitioners of the military art should study and understand this eternal, albeit imposing, text.

Before continuing, it is also helpful to remember the leading question Colin Gray asked, '...are we talking about irregular warfare, insurgency, low-intensity conflict, guerrilla warfare, terrorism, and so forth? The answer is yes, and more than those'.¹¹ Irregular warfare and its relatives are warfare and the objective is controlling the population and relevant territory. How that 'territory' is defined will be discussed later.

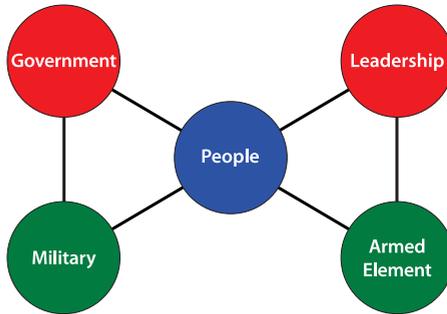
Irregular warfare is characterised first by the environment in which it occurs. To paraphrase Rupert Smith, 'there is no secluded battlefield upon which armies engage, nor are there necessarily armies, definitely

not on all sides.... the people in the streets and houses and fields – all the people anywhere – are the battlefield. Military engagements can take place anywhere in the presence of civilians, against civilians, in defence of civilians. Civilians are the targets to be won, as much as an opposing force'.¹² Secondly, irregular warfare is defined by the adversary, specifically how they choose to fight and the forces they use to conduct their operations. Our goal is to be prepared, agile, and flexible enough to adapt to whatever methods the enemy employs, in whatever environment they decide to fight in.

It has been conventional wisdom that the primary objective, the focus of all political, social, informational, and military efforts in irregular warfare is the people. Mao Zedong noted in his primer on revolution, *Guerrilla Warfare*, that weapons are an important factor in war, but not the decisive factor; it is people, not things that are decisive.¹³ Counter-insurgency expert David Galula noted, 'If the insurgent manages to dissociate the population from the counterinsurgent, to control it physically, to get its active support, he will win the war because, in the final analysis, the exercise of political power depends on the tacit or explicit agreement of the population, or at worst, on the submissiveness'.¹⁴ Current and emerging doctrine in the U.S., Great Britain, and NATO emphasises that campaigns and operations will orient on the populace rather than enemy forces and that the goal of military operations is to restore the legitimacy of the government, secure the support of the population, and neutralise the insurgents' power,

influence, and legitimacy.

It has not been uncommon for those trying to explain or to understand the political and social phenomenon that is irregular warfare to fall back upon Clausewitz's remarkable trinity model. Using two trinities to represent the two antagonists, the government and the insurgents, they



can be turned sideways and joined on the populace, thereby creating a 'sideways hourglass' shape. Dr. Heather Gregg, a professor in the Defense Analysis Department at the Naval Postgraduate School in California, characterised the relationship between the antagonists in irregular warfare as a 'tug-of-war for the loyalty and support of the population'.¹⁵ The sideways hourglass model shows, in graphic simplicity, the tug-of-war between the government and its military competing with the insurgent leadership and its armed element for the loyalty, allegiance, and support of population.

This has served as a reasonably accurate model of the struggle in classical counter-insurgency.¹⁶ Implied by the hourglass model and fully understood by those planning for and engaged in irregular warfare, is that insurgency is first a political conflict, but it is also a social struggle.

Mao Zedong famously observed that irregular warfare was 'politics from the end of a gun'. David Galula, one of the foremost counter-insurgency experts, in his book *Counterinsurgency Operations*, makes the case that the insurgent knows is foolish to fight the government conventionally and thus must 'carry the fight to a different ground where he has a better chance to balance the physical odds against him'.¹⁷ Galula, like so many other theorists and practitioners who have studied Mao and fought against those employing a Maoist strategy, says that 'different ground' is the population. The contest in irregular warfare is a tug-of-war for control, allegiance, and support of the population. In simpler terms, irregular warfare is *fighting about, for and with influence*; influence from both a positive (incentives) and a negative (threats) perspective.

Although there are significant physical elements that must be addressed, the essence of irregular warfare is conflict in the moral domain.¹⁸ This is where irregular conflict is won or lost. The mantra, 'win the hearts and minds' acknowledges that lasting settlement of these conflicts are best achieved via the ballot box rather than the battlefield. In Nicaragua, the FSLN, or more commonly known as the Sandinistas, insurgent organisation became a legitimate political party after the cessation of hostilities and its leader, Daniel Ortega, was eventually and peacefully elected president of the country. The same happened in El Salvador with the FMLN insurgent movement. Similarly, once the Irish Republican Army ceased fighting and agreed to political negotiation, its political

wing, Sinn Fein, sent duly elected representatives to Parliament and continues to exercise significant political clout in the local, peaceful politics of Northern Ireland. As a final example, in 2005, John Garang, leader of the Sudan People's Liberation Movement, negotiated a settlement with the leadership of Sudan under Omar al-Bashir in order to end the fighting, rejoin the political process, and restore southern Sudan via democratic processes.

Examples such as these abound on every continent, from the historical to the current, but they illustrate the key point that irregular warfare is rarely concluded via a *military solution*, but rather through *political resolution*. This is not to say that military force is not required. Quite the opposite is true. In order for political, social, and economic programmes to take root and effect the changes needed to address the root causes of the insurgency, there must first be an environment where the people feel safe enough to participate in the political process. The military and police must provide this safe and security environment. The tug-of-war for the allegiance and support of the populace though, is real, but in order to work towards resolving the grievances which forced the conflict, both the government and the insurgent leadership must compromise and commit to some sort of political process.

What these examples illustrate, too, is that the people are the means to the insurgents' ultimate objective, power. The population is the 'key terrain' in irregular warfare, analogous to the bridges, ports, mountain passes, and dominating heights that are

key terrain in conventional-regular warfare. According to Rupert Smith, the people are the battlefield. But the population is not the capability which is the source of physical and moral strength, or as in British doctrine, 'the most significant hurdle, or obstruction, to attaining the end-state', in irregular warfare.¹⁹ They are not the centre of gravity as some would assert. While acquiescence by the population to the government's side is the desired end-state and according to Galula the prize to be won, the people cannot be the centre gravity.

This does not mean the sideways hourglass model is wrong; quite the opposite. As an illustration of the tug-of-war between the government and the insurgents, it is accurate and useful. Both the government and the insurgents need the physical and moral support of the populace in order to achieve their respective desired political outcomes. The sideways hourglass model does a great job of illustrating the importance of the objective, allegiance and support from the people, in irregular conflict. But it is not a model which offers planners significant help discerning what to do about the irregular adversary they are facing. Re-enter the 5-Ring model.

The True Believers

General Sir Frank Kitson noted that 'insurgents start with nothing but a cause and grow to strength, while the counter-insurgents start with everything but a cause and gradually decline in strength to the point of weakness'.²⁰ What he meant though was that the *government* started with everything, meaning the

diplomatic, economic, military, and informational powers and legitimacy of a recognised nation-state, and successful insurgents gradually eroded the government's strength to shift the powers and legitimacy to their side. Likewise, the successful counter-insurgents were able to avoid the decline and use their power to overcome the insurgents' efforts.

Kitson, like Mao, Galula, Sir Robert Thompson, Bernard Fall, and countless other theorists, practitioners, and analysts of irregular warfare, especially those with a tendency towards the protracted popular war theory proposed by Mao, noted that no insurgency can succeed without widespread popular appeal. Psychologists have spent lifetimes trying to understand what motivates groups and why individuals will think and behave differently in a large group setting than they might otherwise if alone or in a very small group. In 1951, Eric Hoffer published *The True Believer: Thoughts on the Nature of Mass Movements*.²¹ The book should be required reading for all students of irregular warfare (as Colin Gray described irregular conflict, earlier in this paper). *The True Believer* offers insights into the commonalities among ideologically-based mass movements, whether religious, political, or nationalistic. As Hoffer explained in the preface, 'All mass movements generate ... a readiness to die and a proclivity for united action; all of them, irrespective of the doctrine they preach...breed fanaticism, enthusiasm, fervent hope, hatred, and intolerance...all of them demand blind faith and single-hearted (sic) allegiance'.

Insurgencies hinge upon the leadership and the decisions of key individuals. The central figures in every mass movement are the True Believers, men of fanatical faith who embody and articulate the core tenets, inspire and mobilise the masses, and lead the group to action. Depending on the phase of the mass movement, those leaders will either be *men of words*, *fanatics*, or *men of action* (Hoffer's titles). It helps our understanding to spend some time reviewing Eric Hoffer's research.

Men of words are the visionaries and charismatic orators who pioneer the movement by discrediting the prevailing order and institutions, articulating a hope for the future, and offering a means to achieve that better future. Interestingly, without the man of words to unify the masses, humans tend to accept their current situations, no matter how dismal, as the normal state of affairs. It then takes the *fanatic* to ignite the flames of rebellion and mobilise the large, uncommitted portion of the population. Fanatics are those who can see the future articulated by the men of words and are prone to the physical actions needed to achieve that promised future. The fanatic, according to Hoffer, thrives on chaos and will push the man of words aside while still spouting the man of words' doctrine and slogans in order to inflame and unite the masses.²²

Where it takes the man of words to pioneer a movement and the fanatic to give substance to and mobilise mass movements, it is *men of action* who consolidate the effort and institute the enduring elements that ensure the survival and longevity of the movement. Hoffer notes the

man of action 'saves the movement from the suicidal dissensions and the recklessness of the fanatics'.²³ Men of action concern themselves with administering, preserving, and expanding any gains won during earlier phases of the movement.

To illustrate with a modern example, Osama bin Laden can be considered the fanatic for the al Qaeda movement. Through his force of personality, he has mobilised Muslims from around the world to support al Qaeda and its related organisations. But, it was Sayyid Qutb, an Egyptian, and Abdullah Yusuf Azzam, a Palestinian, members of the Muslim Brotherhood and teachers of Ayman Zawahiri and Osama bin Laden, who were the men of words and provided the ideological inspiration for the global jihadi movement. Sayyid Qutb's book, *Milestones*, continues today as a manifesto of radical Islam. And it has been Ayman Zawahiri, controlling, administering, and sustaining the network, who can be considered al Qaeda's man of action.

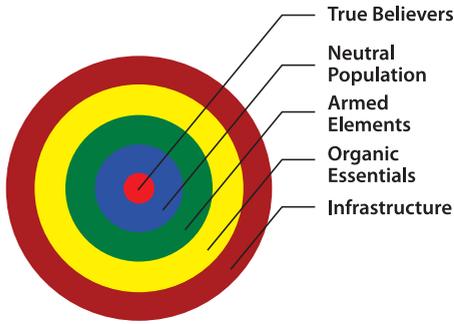
Strategic Paralysis in Irregular Warfare

It is the True Believers who are the 'source of power from which the (insurgent) system derives its moral or physical strength...and will to act'. More specifically, it is the fanatics and the men of action, those political and paramilitary leaders who inspire, mobilise, guide, and sustain the moral and physical strength of an insurgency, who function as the brains of the movement and are therefore the centre of the model. Experience has shown that without great leadership mass movements;

no matter if good or evil, fall apart. Furthermore, so long as the insurgent leadership has no desire or impetus to negotiate a settlement and rejoin the political process, then the government is obliged to take whatever measures it legally and ethically may to render the insurgent leadership impotent—seeking strategic paralysis.

To continue the earlier example, let us assume that al Qaeda's leadership, Osama bin Laden and Ayman Zawahiri are in Pakistan being sheltered by sympathetic tribes. U.S. and NATO forces are unable to capture or kill these True Believers because of political, geographic, and social restraints. Al Qaeda's ability to guide and sustain their global network survives so long as they remain safely in their sanctuary and they retain access to global communications. It is also true that so long as they have reliable sanctuary, the al Qaeda leadership has little or no reason to negotiate and compromise on their radical, ideologically-driven, perspective of how the world should be.

Thus, if friendly forces are unable to directly strike at the centre of gravity, how then to render it powerless or at least so marginalised that bin Laden and Zawahiri are unable to guide and sustain their movement? The answer is to take an indirect approach as was recommended in the original 5-Ring model. If unable to strike the centre directly, then paralyse the centre of gravity by isolating, starving, immobilising, discrediting, marginalising, or otherwise neutralising it through effects generated via the other rings emanating outward from the centre.



If the 5-Ring model is redrawn to illustrate irregular warfare, then the first ring out from the centre, the population, offers the best and most opportunities to affect the True Believers indirectly. It is among the people where the insurgents' critical capabilities, critical requirements, and critical vulnerabilities lie.

To be successful, the insurgent movement must have the active support of the uncommitted majority of the population. Whereas in conventional-regular conflict the adversaries require only the passive acquiescence of the population, in irregular warfare the insurgents use the people as their source of funding ('taxes'), supplies, recruits, intelligence (information), refuge, and eventually political power. This says nothing of the people's enthusiasm for the insurgent cause; it simply acknowledges the importance of the populace to satisfy the insurgents' basic survival needs.

If considered against Maslow's hierarchy of needs model, in order to exist the insurgent movement, like humans, must first satisfy its physiological and then its security requirements. In irregular warfare, the insurgents fulfil their basic levels of needs by taking what they need from the population through persuasion and coercion. Bard

O'Neill, in *Insurgency and Terrorism*, shows how among the different strategies for insurgency and revolution, only the Maoist approach addresses the population with any degree of respect. The others are all top-down approaches that use the population as the source for manpower, logistics, communications, and financing, with little regard for the 'hearts and minds' of the people.²⁴ Understanding Maslow's hierarchy helps us see that while ideological fervour and revolutionary zeal might instil an initial feeling of belonging and possibly foster a sense of self-esteem, it is hard for the insurgency to sustain that passion among the soldiers and supporters when they are cold, wet, hungry, scared, and exhausted, i.e., when their basic needs are not being met. Therefore, friendly campaigns and operations designed to paralyse unassailable insurgent leaders must take the next most effective approach, a whole-of-government effort aimed at the denying the movement its physiological and security needs. This is usually best accomplished by ensuring the government provides the people their basic needs and protects them from intimidation and threats by insurgent armed elements.

The next ring out from the centre is Armed Elements, or the irregular version of fielded forces. This ring has what might be considered a reassuring familiarity to military planners. As in the conventional-regular fight, soldiers fighting other 'soldiers' is what military forces are trained, equipped, and organised to do.²⁵ The challenge for planners in irregular warfare is the lack of identifiable and targetable

military formations among their predominantly guerrilla-style opponents. This is not to say that insurgents never stand and fight—quite the opposite is true, as recent operations in Marjah, Afghanistan have shown. Moreover, at some point the insurgents can and will conduct conventional-regular battles to gain strategic advantage...but they tend to do so at the time and place of their choosing and when the expected results are heavily weighted in their favour. The third of Mao's three-phases is when the insurgents go on the Strategic Offensive and take on government forces in conventional-regular combat. Transition to the third stage though, only happens when the insurgents believe they have sufficient power to defeat the government. The insurgents retain the initiative.

The more immediate threat in the tug-of-war for gaining and sustaining the support of the uncommitted population comes from the insurgent movement's armed elements—politically motivated, usually calloused to violence, and often criminal-like in their attitude toward the populace. Unlike the government which is attempting to 'win' the allegiance and active support of the population, the insurgents rarely concern themselves with persuading the population to willingly join their cause. The insurgents are able to attain their ultimate goal, replacing the government through political violence by coercing compliance and enforcing obedience by the people. Therein lies the government's multi-faceted challenge—how to defeat or deter guerrilla fighters/soldiers while providing a safe and secure

environment for the populace and still representing its actions in a positive and favourable light on the local and world stages? This complex challenge (or opportunity, depending on one's perspective) offers insight as to how planners might impact the insurgent leadership from this third ring.

Just as the True Believers require a safe and secure area from which to control, administer, and sustain their movement, so too does the population need an environment that allows them to live, work, and raise their families free from real or perceived threats to their lives. No matter how grand or how comprehensive the government's programmes to restore services, authority, and legitimacy, counter-insurgency only works when the public feels reasonably safe and secure. Policemen matter! Therefore, the government must have a sufficiently large, adequately trained, and ethically sound security force able to deny the insurgents access to the people, defeat the enemy whenever the guerrillas do give battle, and are seen as apolitical, honest, and just.

The third ring out, Organic Essentials, offers planners a range of possible critical capabilities and critical requirements against which to build an indirect approach campaign plan. Warden defined the organic essentials as those necessities that sustained a modern way of life and kept the industrial machinery operating to produce the weapons of war, i.e., electricity, communications architecture, fuel, money, etc. In irregular warfare, with its decidedly guerrilla character, the adversary has little need for those organic

essentials necessary for conventional-regular warfare. But an insurgency, even a globally-networked, ideologically-driven one, does have organic essentials. The challenge is discovering what they are and how best to effect them when faced with significant sovereignty, legal, cultural, ethical, and political challenges.

Key to al Qaeda's survival has been its ability to spread its message among the Muslim diasporas around the world, sustaining its influx of funds, recruiting fighters from around the world, and attacking Western sensitivities with words and images designed to influence popular opinion among liberal-democratic societies where the leadership gives the population the freedom to express dissenting opinions. The fact that the U.S., U.K., NATO, and their allies are 'playing chess while the insurgents play checkers' is frustrating, but it is a sad fact of life. The challenge, and one of the major reasons why defeating an insurgency takes so long is that 'fighting' on a global scale in the financial markets, world-wide media, supra-governmental political organisations, and international business arenas is orders of magnitude more complicated, difficult, and time consuming than physical combat among soldiers and guerrillas. Operations in irregular warfare are predominantly non-military and require an exceedingly difficult comprehensive, whole-of-government, and multi-national approach. So, while great effects may be generated in the organic essentials ring, the immediacy of the effects and the difficulty of co-ordinating operations are often discouraging.

Infrastructure is placed in the outermost ring because it is the most difficult and therefore the least productive area when developing campaigns and operations against an insurgency. This final ring in the irregular warfare model has a complexity to it that frustrates planners, especially those unable to discard the traditions, methods, and doctrines of conventional-regular warfare. Bridges, roads, communications structures, ports, and the like are easily identifiable and targetable by conventional planners. Striking them has a direct, quantifiable impact upon the conventional-regular fight, i.e., X number of bridges are required for an armoured force to manoeuvre and fight in such-and-such an area. Dropping some or all of them restricts the movement of enemy armoured forces. While irregulars may not have the same requirements for infrastructure as conventional-regular forces, they still must be sustained. What infrastructure guerrillas do require is different than that which military planners have traditionally considered, though. Guerrillas tend to fight primarily with small arms and light weapons, use ubiquitous transportation methods, will normally forage for food, fuel, and medical supplies from among the population, and they have shown innovative uses for commercial communications systems. Although the government requires roads, ports, bridges, and the like in order to implement and sustain its military and civic action programmes, irregulars fighting primarily as guerrillas need little conventional infrastructure to support their forces and operations.

Irregular forces, even in the guerrillas phase, need weapons, ammunition, money, radios/mobile telephones, vehicles, and explosives. Likewise, they need a fitted-for-purpose supply and distribution system able to operate in hostile or denied environment. Insurgents' supply and distribution networks are modelled on, or sometimes even administered by, the international crime and drug networks. These criminal groups have robust and capable networks in place for moving large and small quantities of people, money, weapons, and cargo outside the scrutiny and control of the authorities. The linkage between international crime and insurgency is well documented. It is the perfect marriage. In Colombia, Afghanistan, and Burma, for example, drugs fuel the internal and neighbouring insurgencies. The marketing, production, processing, transportation, distribution, and financing related to illegal drugs have expanded into the related industries of weapons trafficking and illegal immigration. If one looks at insurgent infrastructure from the perspective of border security, immigration, or drug policy enforcement, then there is definitely insurgent infrastructure

worth considering. The problem for military planners is that doing something about this underground network requires an international law enforcement point of view, with all the attendant jurisdictional challenges that arise when policing elements from multiple nations, agencies, and disciplines need to collaborate and cooperate. Decades of international policing efforts have done little to stem the flow of illegal drugs from the producing regions into America and Europe. The same is true for undocumented migrants. These networks illustrate the infrastructures insurgents often use to supply, fund, man, and otherwise sustain their operations. And it is because that underground infrastructure has proven so resilient and difficult to effect that it is placed in the outermost ring of the irregular warfare model.

Comparing the 5-Ring models, then, the leadership is the centre of gravity, the capability and influence from which the insurgents gain their direction, cohesion and will to fight in both cases. In nearly all instances of irregular conflict, the ability to directly target the leadership has been denied, either through political,

Conventional-Regular		Irregular	
Leadership	Political Leader, Commander	Leadership	Fanatics, Men of Action
Organic Essentials	Electricity, Fuel, Water	Population	Active Support (Supplies, Refuge, Info)
Infrastructure	Bridges, Roads, Comms	Armed Elements	Guerrillas, Enforcers
Population	Passive Acquiescence	Organic Essentials	World Opinion, Finances, Sanctuary
Fielded Forces	Military, Police, Paramilitary	Infrastructure	Smugglers, Drug Production

geographical, and/or social restraints. Therefore, counter-insurgents must seek other, indirect, means to neutralise the insurgent leadership. As the population offers most of the effective and relatively easier means of achieving decisive effects, they then become the primary battle-space for both the government and the insurgents. Adjusting the 5-Ring model from a conventional-regular perspective to one more suited for irregular warfare would reorder the rings to be Leadership, Population, Armed Elements, Organic Essentials, and Infrastructure. What is not stated, but becomes obvious in the re-ordered approach to the 5-Ring model, is the affect induced upon the time required to achieve strategic paralysis. Campaigns and operations among the people take time—on average about 10 years. The rapid application of overwhelming force that is the hallmark of U.S. and NATO conventional-regular military operations does not apply to irregular warfare. An indirect approach focused on winning and sustaining the active support of the population, thereby denying the same to the opponents, is a long-term effort. Commanders and political leaders must accept this fact and be prepared for the commitment.

Conclusion

The strategic effect intended by the 5-Rings perspective is 'strategic paralysis', i.e., rendering an adversary impotent by eliminating or neutralising the control and decision-making apparatus. That objective is as valid in irregular warfare as it was in the conventional-regular context Warden originally developed it to portray. When unable to directly

target the adversary's leadership (sovereign, commander, chief executive), strategic paralysis can be achieved by operations, both non-kinetic and kinetic, in the four outer rings of the model. To be an effective model for irregular warfare the rings must be reordered from Warden's original offering to portray the changed character of modern conflict. Still, as with the original 5-Rings, the further one moves away from the leadership or decision-making element, i.e., the centre of gravity, the more difficult it becomes and the longer will take to achieve the desired strategic end-state—strategic paralysis. It is this strategic paralysis, rendering the enemy system impotent by neutralising the decision-making and controlling authority that is the key take-away from Warden's work. It is also why the 5-Ring model remains a valuable aid to campaign planning in the form of conflict its designer preferred to avoid.

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Notes

¹ John A. Warden, III, *The Air Campaign: Planning for Combat*, (Washington, DC: National Defense University Press, 1988).

² See for example, David Jordan, et al, *Understanding Modern Warfare*, (Cambridge, U.K.: Cambridge University Press, 2008); Phillip S. Meilinger, ed., *The Paths of Heaven: The Evolution of Airpower Theory*, (Maxwell AFB, AL: Air University Press, 1997); and Colin Gray, 'Understanding Airpower: Bonfire of the Fallacies', *Strategic Studies Quarterly*, (Washington, DC: National Defense University Press, Winter 2008).

³ Rupert Smith, *The Utility of Force: The Art of War in the Modern World*, (London: Penguin Books, Ltd, 2006).

⁴ The idea of striking directly at enemy vital centres and overstepping the forces on the ground is as old as airpower itself. The advent of reliable and abundant precision-guided, small yield weapons has enabled achievement of what the early airpower theorist prophesied.

⁵ 'Strategic' during the Cold War became synonymous with nuclear weapons rather than the level of war at which national security objectives were defined and policy was established to determine appropriate uses of national or alliance power.

⁶ The Air Corps Tactical School called this concept the "industrial web" theory. Its key tenets included the interdependence of a nation's military, political, economic, and social elements and that it was possible to precisely target "vital centres" in order to upset the equilibrium of modern society. Michael S. Sherry, *The Rise of American Air Power: The Creation of Armageddon* (New Haven, CT: Yale University Press, 1987), 49 – 58.

⁷ John A. Warden, III, 'The Enemy as a System', *Airpower Journal*, (Maxwell AFB, AL: Air University Press, Spring

1995), 8.

⁸ Clausewitz, pg 479.

⁹ Colin Gray, 'Irregular Warfare: One Nature, Many Characters', (*Strategic Studies Quarterly*, Washington, DC: National Defense University Press, Winter 2007), 40.

¹⁰ Clausewitz, pp 479 – 83. Book 6, Chapter 26.

¹¹ Gray, 37.

¹² Smith, pp 3 – 4.

¹³ Samuel B. Griffith, ed. and trans., *Mao Tse-tung on Guerrilla Warfare*, (New York: Praeger, Inc., 1961)

¹⁴ David Galula, *Counterinsurgency Warfare: Theory and Practice*, (New York: Frederick A. Praeger, Inc., 1964), 7 – 8.

¹⁵ Heather S. Gregg, 'Beyond Population Engagement: Understanding Counterinsurgency', *Parameters*, (Carlisle, PA: Army War College, Autumn 2009), 19.

¹⁶ See for example, David Galula; Robert Thompson, *Defeating Communist Insurgency*, (St Petersburg, FL: Hailer Publishing, 2005, originally published in 1966); Robert Tabor, *War of the Flea: The Classic Study of Guerrilla Warfare*, (Washington, DC: Brassey's, Inc, 2002, originally published in 1965), and Frank Kitson, *Low Intensity Operations: Subversion, Insurgency, and Peacekeeping*, (St Petersburg, FL: Hailer Publishing, 2007, originally published in 1971).

¹⁷ David Galula, *Counterinsurgency Warfare: Theory and Practice*, New York: Frederick A. Praeger, Inc., 1964, pg 7.

¹⁸ NATO recognises three domains of warfare; physical, moral, and cybernetic (*ACO Guidelines for Operational Planning*, July 2005, pg 3-4). The British, too, recognise three domains; physical, virtual, and cognitive (JDP 01, *Campaigning*, 2nd edition, pg 3A-2).

¹⁹ JDP 01, pg 3-22.

²⁰ Kitson, pg 29.

²¹ Eric Hoffer, *The True Believer: Thoughts on the Nature of Mass Movements*, (New York: Perennial Classics, 2002, originally published in 1951).

²² Hoffer, pg 144.

²³ Hoffer, pg 149.

²⁴ Bard O'Neill, *Insurgency and Terrorism: From Revolution to Apocalypse*, Dulles: VA: Potomac Books, Inc., 2005, pp 45-60. This chapter on insurgent strategies is essentially the same as in the 1990 version, *Insurgency and Terrorism: Inside Modern Revolutionary Warfare*, published by Brassey's, Inc.

²⁵ Smith, pg 6. 'Military force when employed has only two immediate effects: it kills people and destroys things. Whether or not this death and destruction serve to achieve the overarching or political purpose the force was intended to achieve depends on the choice of targets or objectives, all within the broader context of the operation'. v

Aviation and Guerrilla War: Proposals for ‘Air Control’ of the North-West Frontier of India

By Lieutenant Colonel Andrew Roe

In early 1925 Wing Commander R. C. M. Pink tested the utility of air control against the mountain strongholds of the Mahsud tribesmen on the North-West Frontier of India. The 54-day air campaign was a success – with the loss of only two British lives – and proved to be a timely catalyst for an ambitious plan for the RAF to take full control of the precipitous frontier. But unlike Mesopotamia, Transjordan and Palestine, policing by bomber gained little traction on the frontier, despite repeated attempts. Pulling the many competing threads together, this article highlights the discourse behind the proposals to employ aircraft to control the frontier, exposes the inter-Service relations, and brings to light the key personalities involved.

But the really revolutionary development, and the one which may contain a lesson for the future in a far wider and more important context, was that of air control.

Sir John Slessor, *The Central Blue*

Introduction

In 1925, Wing Commander R.C.M Pink conducted a 54-day air campaign without army support against noncompliant Mahsud tribesmen in Waziristan. The operation led to a peace treaty at the cost of two airmen and one aircraft. Although opinion about the wider significance of 'Pink's War' remained divided along service lines, Marshal of the Royal Air Force (RAF), Sir Hugh Trenchard was delighted with the outcome of the action. He immediately devised an ambitious plan for the RAF to take full control of the North-West Frontier of India, with aircraft dealing exclusively with unrest and raids in tribal territory. His scheme – policing by bomber – saw an increase in the number of frontline squadrons, with a compensating reduction in infantry battalions. The initiative gained little traction with the General Staff, and the proposal temporarily faded into the background noise of frontier uprisings. However, in 1927, a Mohmand *lashkar* (tribal armed force), totalling approximately 1,400 tribesmen, crossed the administrative border from tribal territory and attacked a number of police block-houses. The tribal aggressors only dispersed after two days' of concentrated bombing by three squadrons of aircraft, resulting in approximately 30 enemy casualties. Likewise, a year later, intensive bombing forced two Mahsud sections

to release their Hindu captives after conventional negotiations failed.¹ The success and relative economy of both operations again raised the issue of the RAF assuming responsibility for the frontier and questioned the future allocation of scarce resources. The discourse behind the use of aircraft to garrison and control the precipitous frontier, the personalities involved, and the psychological impact of air power are worthy of examination for air power academics, historians, soldiers and airmen alike.²

The Evolution and Realities of Air Control

The arrival of fabric-covered biplanes on the frontier in 1916 offered the potential to revolutionise control of an area of over 27,000 square miles of inhospitable mountainous terrain. Despite a number of alternate initiatives, decades of heavy-handed army incursions into tribal territory, designed to inflict sharp lessons on the inhabitants, resulted in almost no advancement in the pacification of some areas. Such activity, which routinely sought to achieve maximum damage by killing men, animals and damaging property, resulted in the tribesmen becoming increasingly reluctant to fight in a conventional manner. Instead, the Mohmands, Afridis, Wazirs, Mahsuds and Bhattanis developed skilful guerrilla tactics against government forces.³ The days of coloured banners, beating drums and head-on knife-charges were almost a thing of the past.⁴ Accordingly, it was harder to punish an elusive, persistent and difficult prey. Superior tribal surveillance skills and an effective warning system meant that villages were often found empty when a punitive force arrived

to exact retribution. Moreover, since destroyed or damaged buildings were quickly re-built or repaired, the effect on the tribesmen was temporary at best. Air Commodore H. Le M. Brock, C.B., D.S.O. provides a useful précis of the traditional retaliatory army operation:

*In the past the tribesmen has relied upon his inaccessibility. His village, all his material resources, his base of operations, his crops, his cattle, have either been out of our reach altogether or only to be reached by fighting our way a long distance through the hills to them. To punish him, we have tried to bring him to battle, but the many new resources of our troops have made him more reluctant than ever definitely to oppose them. We have, in the past, in order to punish him, had to penetrate with difficulty, and with great cost in money and lives, to his villages, and shell them or otherwise destroy them.*⁵

Many critics felt that such a destructive technique engendered a lasting legacy of hatred and contempt against British rule.⁶ They also felt that punitive expeditions united the tribesmen in armed insurrection and convinced Britain's enemies that there was considerable opposition to British rule. Due to their high cost, expeditions were mounted infrequently and only when the need for action had been demonstrated repeatedly by accumulated crimes.⁷

Aircraft offered a unique combination of mobility, striking power and invulnerability to frontier control. They also proffered an inexpensive, timely and effective means to observe and punish rebellious tribal behaviour. No longer solely employed in co-operation with other

arms, aircraft were increasingly considered as a 'new weapon' capable of securing a change of heart with the minimum amount of force. Their mobility enabled them to conduct surprise attacks on a desired village without the need for painstaking preparations and long marches through tribal territory. The use of airpower also allowed the government to disrupt the normal pattern of life of the tribes to such an extent that a continuance of hostilities became intolerable, by driving the tribesmen into cave dwellings and neighbouring territory, scattering flocks and preventing routine harvesting. Such an approach also barred the tribesmen from having a fight on equal terms and acquiring loot, particularly capturing a good British service rifle.⁸ Perhaps unsurprisingly, air attack was a tactic that the tribesmen considered unfair and unsporting. The justification behind this technique was the tribal principal of communal responsibility – 'what the India Office called 'the time-honoured method of enforcing on a tribal community responsibility for the acts of its individual members.'⁹

Such activity was governed by clearly defined rules. Tribes were warned of government demands or an impending air operation either by messenger (via the Political Agents who endeavoured to control the tribes), during a tribal *jirga* (assembly or parliament of tribal representatives), or by coloured leaflets scattered liberally from the air. White leaflets were dropped a number of days prior to the bombing, followed by red leaflets twenty-four hours before the attack. This allowed

the tribesmen time to consider their position and, perhaps, to comply with government demands. It also allowed the RAF the opportunity to conduct detailed photographic reconnaissance of the area and to become familiar with the country.

Leaflets set out the reason and nature of the action and when reprisals would begin. They also clearly articulated the government's terms (e.g. the payment of a fine in cash, rifles (tribal and government) or livestock; the return of captives or stolen property; the production of hostages or the expulsion of undesirable agitators; attendance at a *jirga*; the evacuation of a specific area – another tribe's grazing grounds for example – of which the tribe was in illegal occupation; or a number of other possible conditions)¹⁰ and the date by which submission must be made. Additional details could include: evacuation of a specified village or a prescribed zone by a precise time – including women and children as well as livestock, household goods and agricultural implements; an explanation of the physical dangers of entering a prescribed zone until terms had been accepted in full; a warning that delayed-action bombs would be employed, set to explode at uncertain intervals; the hazards of unexploded bombs – a popular form of architectural ornament; and what to do if a tribe decided to submit.¹¹ After the expiration of the warning, aircraft would immediately appear over the area and begin bombing those charged with misbehaviour.

To be effective there had to be no misunderstanding about the object of the operation and the aims of the

government. However, not all warning leaflets contained specific detail and many were brief and left open to degrees of tribal interpretation.

Whereas lashkars have collected to attack Gandab and are to this end concentrated in your villages and lands, you are hereby warned that the area lying between Khapak-Nahakki line and the line Mullah Killi-Sam Chakai will be bombed on the morning of [date] beginning at 7 a.m. and daily until further notice.

You are hereby warned to remove all persons from all the villages named and from the area lying between them and the Khapak and Nahakki Passes and not return till further written notice is sent to you. Any person who returns before receiving such further written notice will do so at his own risk.

Signed Griffith-Governor,
dated 4th September 1933.¹²

There were other challenges in employing coloured notices. In error, leaflets were sometimes dropped on the wrong village, causing confusion, or were blown off target by strong mountain winds. The many defiles which led up to tribal territory were often difficult to distinguish from the air causing further geographical confusion. Despite extensive aerial survey, maps of the frontier remained unreliable, and it was sometimes difficult to positively identify a specific village, especially as villages were of identical construction. Moreover, most tribesmen were illiterate and could make little sense of a written demand, no matter what colour the paper. Only those who had experienced repeated bombings understood the escalatory colour system employed by the

government. Besides, even literate tribesmen could sometimes find the detail of the text difficult to understand. Referring to 'lines' or specific areas caused confusion; there was rarely anybody to turn to for clarification in the time available. More fundamentally, the tribesmen loosely employed the *Hijri* or Islamic lunar calendar, whereas government forces relied on the Gregorian solar calendar. The difference between the two is great and added further to the misunderstanding when specifying dates.¹³ Others, like the Fakir of Ipi, a notorious religious firebrand, cleverly exploited the employment of leaflets. In a society heavily influenced by superstition, paranormal beliefs and half-truths, many of his followers viewed the dropping of leaflets as physical evidence of the Fakir's mystical powers of being able to turn bombs into paper.¹⁴

However, unlike a traditional retaliatory army expedition, the RAF hoped that operations would be conducted against an empty village or vacated area. Air Commodore C.B.E. Burt-Andrews, C.B., C.B.E. recalls: '... I can testify from personal experience, the entire [village] population could be seen sitting in grandstand formation on the hills round the area to watch the show.'¹⁵ Advanced notices allowed the tribesmen ample time to relocate their families and as much of their movables, valuables and livestock to a place of safety in order to avoid casualties. However, this was not always the case and many chose to stay put, despite elaborate attempts to secure their removal. A number of tribesmen remained to protect

their property, for fear of being robbed by their fellow countrymen. Air Commodore N.H. Bottomley, C.I.E., D.S.O., A.F.C. recalls: 'Bitter complaints came from a tribesman of the Burhan Khel, who had had a large store of *ghee* [clarified butter] which had disappeared from his house. He was 'between the devil and the deep sea,' whether to stay, protect it, and be bombed, or to leave it and be robbed. He left it, for fear of bombs, and lost his *ghee*.'¹⁶ Captain Munford points to a further grouping that had little choice but to sit tight: 'Air-bombing of the villages strikes hardest at the poor – the weak, the aged, the sick – who stay at home.'¹⁷

Tribesmen generally sought refuge in surrounding caves, which were flea-infested and extremely uncomfortable, or became unwanted guests in neighbouring villages. *Pushtunwali*, the uncompromising Pathan code of honour, ensured that requests for provisions and refuge were approved without protest, but should any fighting occur with government forces, receiving villagers ran a substantial risk of being mistaken for the misbehaving tribesmen. Likewise, those found sheltering tribesmen would be warned by coloured leaflet and, should they fail to expel their guests, subsequently bombed. Colonel F.S. Keen points to a shortcoming of this tactic: 'By driving the inhabitants of the bombarded area from their homes in a state of exasperation, dispersing them among neighbouring clans and tribes with hatred in their hearts at what they consider 'unfair' methods of warfare, bring about the exact political results which it is so important in our own

interests to avoid, viz., the permanent embitterment and alienation of the frontier tribes.¹⁸ Others, unsurprisingly, questioned whether collective tribal responsibility and punishment was the best and most humane way of dealing with the tribes. Such comments were stiffly ignored.

Throughout the British Empire, this evolving method of controlling tribesmen by airpower alone was to become known as 'air control.' The official definition states:

*The political administration of undeveloped countries inhabited by backward and semi-civilised populations, rests in the last resort upon military force in one form or another. The term 'air control' implies that control is applied by aircraft as the primary arm, usually supplemented by forces on the ground, which may be armoured vehicles, regular or irregular troops, armed police or tribal forces – according to particular requirements.*¹⁹

As a means of controlling the Empire's outer reaches within the economic constraints of the day, air control became the system by which an area was dealt with primarily by air action, in which the RAF was the predominant arm and the responsible commander an airman. This method was honed over time in response to complex situations on the frontier, unrest and banditry in Iraq, disturbances in Aden, and revolt in Palestine and Transjordan. However, Air Vice Marshal E.R. Ludow-Hewitt notes in a lecture to the Imperial Defence College in April 1933 that: 'I must admit that I have been in the habit of using the term in a rather broader sense, namely to describe the

use of air forces for the purpose of maintaining good order and security in certain districts irrespective of whether the Commander-in-Chief is an Air officer or an Army officer.'²⁰ Sir John Slessor, who recognised the essence of tribal control, cautions in *The Central Blue* that: 'In point of fact you do not control a country from the air, any more than from the business end of a gun. It is the civil administration, the District Commissioner or Political Officer, and the policeman who *control* the country. The Services, whether Air or Army, have an important influence by providing the necessary visible backing of force behind the civil administration.'²¹ Slessor recognised the importance of political primacy and the necessity for the military commander to cooperate closely with the political authorities; both had to understand and appreciate each other's point of view.

However, to attain a rapid political solution by the minimum use of force, air control required a detailed knowledge of the country and a nuanced understanding of the tribesmen.

It is useless having the power to deal with trouble at great distance within a few hours if it takes weeks for the information of the trouble to reach Headquarters. Further, one cannot deal with the trouble effectively unless one knows about those responsible for it, about the causes and the actual circumstances of the disturbance, so that one knows where and what to attack and how to deal with it. Consequently air control depends upon a first-class system of intelligence and also upon efficient means of transmitting that intelligence. Hence, considerable use is made of W/T [wireless telegraphy],

*because we have in wireless a cheap means of giving the necessary wings to our intelligence information.*²²

It was essential to understand the habits, religion, customs, philosophy, industries, values, heritage, gender rules, and social outlook of each tribal section and sub-section. It also required a comprehensive familiarity of what villages or valleys were inhabited and the exact houses of all *maliks* (tribal leader or elder) and mullahs, as well as the source and location of all water supplies. This intelligence was necessary to determine the decisive points at which to apply pressure. Some of this was well-known by the political authorities, scouts and *kassadars* (tribal levy or policeman). Further information was contained in a comprehensive 'tribal directory,' as well as annotated on maps of the frontier.²³ These were supplemented by aerial photographs, which proved invaluable to conduct detailed planning. Sir Stuart Pears, writing in 1924, posits: 'Thanks to aerial photography we have acquired a large amount of knowledge concerning various important tracts of Waziristan of which we knew practically nothing in former times ... it has enabled us to fill in all these large gaps in our maps with a considerable degree of accuracy ...'²⁴

Photographic intelligence duties also demonstrated the ability of government forces to go anywhere at any time. Air Commodore N.H. Bottomley, C.I.E., D.S.O., A.F.C. recalls: 'The airman may see few tribesmen on these [photographic] reconnaissance's, but thousands of tribesmen see aircraft, and in it they recognize the Government's power.'²⁵

However, equally important, aircraft permitted the political officers greater coverage of their areas. Sir Norman Bolton, a former Chief Commissioner of the North-West Frontier, notes: 'It

is easy to show that by means of the aeroplane a Political Officer can obtain a far more intimate knowledge of his charge than was ever possible in the past.'²⁶ Any increase in understanding helped reduce the risk of punishing the guilty and innocent alike. The political authorities, who routinely viewed the employment of aircraft as an opportunity, were hardly ever opponents of air control. Indeed, some scouts took to the air to help the RAF identify villages.

Therefore, air control sought to achieve results in timely fashion with minimum casualties and loss of material. The 'moral effect' was achieved on the tribesmen by his helplessness and his inability to reply effectively to the attacks; not via a traditional fight resulting in significant casualties on both sides. This was an important characteristic, as after successful operations, aircraft would be used as a means of positive contact with the tribesmen. Teams would be despatched to the area to blow up unexploded bombs and to offer medical assistance. However, not all agreed that air control alone could alter the behaviour of those influenced by some deeper motive for resistance, such as religious fanaticism. The tribesmen's belief in the teachings of their *mullahs* and occasional fanatical *fakirs* (holy men) was total, especially if such men advocated a *jihad* (holy war) against the infidel.²⁷ The jury was to remain undecided on the merits of air control on the frontier, despite repeated

attempts to secure its introduction.

Bringing the Tribesmen to Heel by Airpower: Control without Occupation

It is not jealousy that makes us say, "either do it with the Army or by the air method;" it is the fact that the two methods are like oil and water in that they will not mix: the air method drives the tribesman away, the army punitive expedition makes him stand and fight; the air method gets its results by boring the tribe, by being impersonal and by giving it nothing to hit back at; the army expedition causes intense excitement and its essence is battle and death, or glory and loot, for the tribesmen.

C.F.A. Portal, "Air Force Co-operation in Policing the Empire"

The idea of the RAF controlling the frontier was first uttered in August 1922 by the Chief Commissioner, Sir J.L. Maffey. He cautioned that 'we [the government] are up against a new class of armament and a spirit of independence which our spasmodic hammerings have merely hardened.'²⁸ He believed that a fundamental change in approach was required. Brian Robinson provides a useful précis of Maffey's radical proposal for maintaining order amongst the tribes in *Crisis on the Frontier*: 'He believed that the presence of the army in tribal territory was a constant provocation and temptation to the tribesmen. His solution was to withdraw completely from tribal territory and to protect the settled areas by defending the Administrative Border... Any incursion or outrages across that border would be invariably and immediately punished. Otherwise the tribes would be left to their own

devices.'²⁹ The ground-breaking feature of Maffey's proposal lay in the suggestion that the army would be prohibited from entering tribal territory, and that the role of enforcing control would be handed over to the RAF to manage thousands of square miles of country relatively unaided.

Maffey's proposals occurred at exactly the same time that Air Vice-Marshal Sir John Salmond, K.C.B., C.M.G., C.V.O., D.S.O. submitted a detailed 37-page report to the Viceroy on the state of the RAF in India.³⁰ In early summer 1922, Salmond, accompanied by Wing Commander A.J. Chamier, had been dispatched on the request of the Prime Minister to undertake a searching inquiry into the low state and efficiency of the RAF in India. This initiative occurred only after a thorough campaign of protest letters to the national press damning the government for the terrible state of affairs.³¹ The Indian sub-continent lagged behind the air forces in Europe, but in the early 1920s it was in a particularly perilous state of serviceability. The effect of this on operational efficiency was profound and pilots were rapidly losing confidence in their machines. Salmond's comprehensive terms of reference included to 'represent to the Viceroy of India and his senior political and military officers the possibility of effecting economies by the increased use of the Air Force, in co-operation with the Army, for controlling territory,' and also to 'study the existing organization and administration of the Royal Air Force in India with a view to ensuring the future maintenance of air units in that country in a state

of efficiency.³² Salmond found an appalling state of affairs and a stubbornly reactionary conservatism to his recommendations. His clear-cut summary of the state of the RAF in India was scathing:

It is with regret that I have to report that the Royal Air Force in India is to all intents and purposes non-existent as a fighting force at this date. The number of aircraft on the authorised establishment is 70; of these two-thirds or 46 should be constantly serviceable in any climate. In the Royal Air Force in India on 23rd August 1922, the total number shown as serviceable was 7 (or 15 per cent of expectation) and of this number a percentage are so old and decrepit that they should have been already struck off charge, while some are flying without the incorporation of technical equipment essential to safety.³³

In addition to recommendations for increases in personnel, barracks and technical accommodation, two additional squadrons, a separate financial budget,³⁴ and a thorough reorganisation of the RAF in India, Salmond also stressed that significant economies could be achieved by the wider employment of the RAF in India, and particularly on the frontier.³⁵ Consequent on the uplift of two squadrons, the report included a detailed proposal for the RAF to assume overall responsibility for Waziristan, the storm centre of the frontier, as the sole weapon for the control of the tribesmen. However, this proposal differed in concept from Maffey's scheme in that it did not go as far as to exclude the army completely. Robinson posits two reasons for this difference: 'Firstly, the RAF's success in air control, in

Iraq, Somaliland and the Sudan, had been in close cooperation with ground forces, and secondly, in 1922 the RAF was fighting for its continued independence and Salmond and the Air Staff were cautious about treading on too many toes.'³⁶ Moreover, there was a great advantage to have ground forces to consolidate success, to show the flag, or to bring relief to the tribesmen in times of hardship.

The Commander in Chief at the time, General Sir Henry Rawlinson, remained unconvinced by the RAF's claims to be able to police the tribesmen. In August 1922 he wrote: 'After very considerable experience of the potential and limitations of aircraft, both during the Great War, in northern Russia and here upon the frontier, I am unable to accept the optimistic predictions set forth [by the RAF].'³⁷ Even though the RAF had proved its value on the frontier in cooperation with the army, Rawlinson rightly pointed out that air action alone had not been decisive against the troublesome Mahsuds in 1920, owing to a lack of favourable targets. The upshot was that extensive ground and air operations were required to make the tribe submit. This included the employment of two six-inch howitzers to carry out a continuous and irregular shelling of tribal villages; a role the RAF had failed to fulfil.³⁸

Although not referred to in the supporting evidence, there were other well-known examples of where air power had seemingly fallen short. For example, during a raid against Mahsuds in the Ahani Jangi Gorge on 14 January 1920, and despite inflicting heavy casualties, three

Bristol F.2 Bs were shot down by accurate tribal fire; two aircraft were wrecked and their crews killed, while the third managed to crash-land in a riverbed without serious injury to its crew.³⁹ Overall British losses for the day totalled nine officers killed and five wounded.⁴⁰ Therefore, Rawlinson made clear that he was 'not willing to make any reductions in the covering troops or in the field army until the experiment [of air control] has incontestably proved a success' in Iraq [the principal proving ground].⁴¹ Further evidence was required to make a final judgement. Moreover, there was a wider feeling that there would be no independent role for the RAF on the frontier until self-contained operations had been thoroughly tested, and this experiment was not to occur until early 1925.

Rawlinson was not alone in his scepticism; doubts also came from across the international border. Consecutive British Ministers in Kabul disputed the effectiveness of air control and questioned the morality of its employment. Sir Francis Humphry believed that aerial attack would increase the extreme dislike and bitterness of the British amongst the tribes. Sir R. Maconachie, Humphry's successor, believed that the RAF was simply unable to discriminate from the air between friendly and unfriendly villages.⁴² Furthermore, the employment of delayed-action bombs to keep tribesmen away from their fields during the hours of darkness, the targeting of man-made water sources to prevent irrigation, and the employment of incendiary bombs were all open to strong

condemnation. The Air Staff was fully cognisant of such criticisms, but worked hard to sell the virtues of air control. This was particularly true on humanitarian grounds, in that the RAF acted mainly as a nuisance in the interruption of life, but also in that the tribesmen could only sit helplessly on a hillside and watch the destruction of their property.

However, this was far from a straightforward difference of opinion. Lecturing in 1937, Air Commodore C.F.A. Portal, D.S.O., M.C. highlights the ongoing challenges faced by the Air Ministry:

Police work by the Air Force as a primary arm ... has developed since the War in an atmosphere clouded at times by misunderstanding and fogged by controversy, and although I am happy to say that the controversy is now dead there is still, in some quarters, misunderstanding, or perhaps I should say, a lack of understanding, of how Air Force police operations are conducted and how they differ, in concept and in execution, from land operations.⁴³

While the RAF and its supporters began magnifying the virtues of air control on the frontier, the army became increasingly entrenched in its opposing position. Flight Lieutenant C.J. Mackay, M.C., D.F.C. in his Gold Medal (RAF) Prize Essay for 1921 notes astutely:

Like every new weapon of war, the aeroplane finds on one side ardent supporters, who in their enthusiasm are liable to exaggerate its potentialities regardless of its limitations, and on the other side it finds antagonists who see in it a weapon of very restricted power. It should be our object to investigate both

*sides of the question dispassionately, and, by so doing, find the happy medium which will define the influence of aircraft on modern war; our policy should then be moulded accordingly.*⁴⁴

However, this was far easier said than done. The discourse in India was less than balanced, despite the best attempts of the RAF leadership to avoid offending the army. Besides, as Sir John Slessor recalls, this was not simply an even debate: 'And anyone who is tempted to think that RAF officers of the inter-war years were unreasonable or prone to extravagant claims should remember that, from their earliest youth, they were constantly faced with disparaging criticism ...'⁴⁵ Slessor's point was valid: every single advance in the use of air power had to be fought through a generally obstinate and often pig-headed opposition from the older services.

Although air control proposals for the frontier wallowed under token consideration, Salmond's wider findings were provisionally approved, and some conditions improved. Chaz Bowyer notes cautiously in *RAF Operations 1918-38*: 'Yet within a year, and indeed for a decade thereafter, air power as a factor of overall operations in India was ignored by successive army and Vice-regal committees when policies were debated and proposed. Even the two extra squadrons recommended by Salmond – and agreed by the authorities in 1922 – were not actually despatched until six years later.'⁴⁶ Moreover, Salmond's findings had little affect on the squadrons' maintenance problems, and spares remained in short supply. Money, predictably, was driving factor in the

operational effectiveness of the RAF on the frontier.

Emerging victorious but worn out from the Great War, the Treaty of Versailles resulted in major cuts in the size of the RAF as a whole and the termination of new aircraft development. The government, under considerable pressure to achieve Service economies, did its bit to reduce outgoings, and the RAF squadrons on the frontier were an easy target. Sir John Slessor recalls: 'Indeed I think it was inevitable that among the senior advisers of the Viceroy the combination of ignorance about Air matters, ingrained tradition, and the Englishman's national suspicion of anything new should have had the result that, when cuts in military expenditure were required, they should fall upon this new Service, which no one understood.'⁴⁷ To make matters even worse, '... the Army high command in India now began a systematic campaign to make the RAF Squadrons on the frontier completely subordinate to army formations – a kind of cavalry at their beck and call.'⁴⁸ Despite financial constraints, ignorance and attempt to subordinate the RAF on the frontier, the squadrons continued to operate above tribal territory with great skill and tenacity, reflecting great credit on the pilots and on the airmen who maintained the aircraft.

Although the RAF tried to reinvigorate the employment of air control on the frontier in the 1920s, especially after the success of Pink's War, the moment for change had seemingly passed. Air control, once *de rigueur* in many circles, was

slowly dropping out of the frontier vernacular. Indeed, in a lecture given in 1939, titled "The Work of the Royal Air Force on the North-West Frontier," Air Commodore N.H. Bottomley, C.I.E., D.S.O., A.F.C., who commanded the RAF Group in Peshawar from 1934-37, makes no reference to the wider employment of air control and even goes so far as to suggest that it was never attempted on the frontier.⁴⁹ This was perhaps not only due to a lack of knowledge, but also due to the rigid constraints placed on the use of aircraft that made the technique almost impossible to employ. These were often dictated by lack of understanding, prejudice and external pressure. Sir John Slessor, who was particularly cognisant of increasing restrictions aimed at limiting casualties, notes that the RAF in frontier warfare were '... cribbed, cabin'd and confined' by all sorts of ludicrously out-of-date instructions on the height we should fly, when, how and against what we might use our weapons and so on ...⁵⁰ Aerial attack could only occur if sanctioned by the political authorities, and then only after due warning to the tribesmen. Although the death knell had finally tolled for air control of the frontier, the detailed Air Staff proposal of 1930 is worthy of evaluation as it highlights significant economies.

The Air Staff Scheme for the Control of the North-West Frontier of India

In July 1930, the Air Staff submitted a detailed proposal for the quasi-administrative control of the North-West Frontier Province, the rugged valley of the Zhob and the whole

of the relatively open country of Baluchistan – referred to as the 'Frontier Zone' – by air control. The proposal referred specifically to replacing the covering forces permanently stationed on the frontier, amounting in strength to the equivalent of four divisions, in so-called 'control' of tribal territory.⁵¹ No recommendations were made for the forces employed on internal security duties, approximately 17,000 irregular forces – scouts, frontier constabulary and *kassadars*, or the role of the wider Field Army. The scheme was based on the assumption that the plan for war against Afghanistan (the 'Minor Danger') or Russia (the 'Major Danger') – i.e. an initial air offensive followed by a military advance – remained unchanged, requiring considerable RAF involvement from the outset. The underlying principles and recommendations of the proposal were:

- Airpower was to be employed as a replacement for mobile columns⁵² as the primary striking force against the tribesmen.
- Regular military forces would be employed for the physical protection of all centres of importance. This included all aerodromes and landing strips, as well as a chain of frontier posts, to prevent the infiltration of tribesmen out of a blockade area. In addition, mobile forces would be retained to protect any improvised landing ground, or, if needed, to assist in the security of road construction parties, as well as to collaborate to 'secure the full fruits of success of an air operation' after the main resistance has been overcome from

the air.⁵³

- To achieve their primary role, the RAF would require an increase of three squadrons, of which two would be heavy transport bomber squadrons 'of the most modern type.'⁵⁴ Additionally, as personnel became available, a fourth squadron would be formed as an Indian Air Unit.
- Employing the latest heavy bombers as troop carriers, two squadrons could transport a reinforcement of about half a battalion of fully-armed men to any town or landing strip throughout the frontier in a single day. This, it was highlighted, would be a supplementary role to their main purpose as large-capacity long-endurance bombers.
- The employment of airpower as the primary striking force to overcome tribal resistance would allow for the release of a number of military and administrative units from the forces allocated to frontier control. The proposal posits that these units could be transferred to another function, such as internal security, or utilised to meet the needs of the Field Army. 'If, however, not required elsewhere, their disbandment would make possible considerable reductions in defence expenditure should that be the more urgent need.'⁵⁵
- All forces would be under the control of an A.O.C – so that the maximum strength and economy of force could be utilised – in direct contact with the political authorities.⁵⁶ The principal political officers would be delegated certain discretionary powers to call for air action in consultation with the

A.O.C. In addition: 'Political centres would be provided with R/T [radio telegraphy] or W/T [wireless telegraphy] communications to political and air Headquarters. To ensure the closest liaison with political officers, and in order that the tribal intelligence available shall be of the best, certain special service officers for intelligence purposes would be provided.'⁵⁷

- The air command would be similar to the other commands in India and would sit under the Commander in Chief (C-in-C). In addition, there would be an A.O.C. in Chief (A.O.C. in-C) at Army Headquarters under the C-in-C. The A.O.C.-in-C would attend all meetings whenever important defence matters were discussed and when any matter affecting the RAF was up for consideration. The proposal notes: 'The A.O.C.-in-C should, in addition, have access to the Viceroy in regards to air operations.'⁵⁸
- The government scheme of opening up tribal territory through the construction of roads, which, up to 1930, had only applied in Waziristan, would continue in full. Although expensive, time-consuming and frequently provoking opposition, experience elsewhere in the Empire had shown this to be both practical and beneficial under a system of air control.

In 1930, under peacetime arrangements, the covering forces on the Frontier Zone amounted to: five British battalions, 41 Indian battalions (including two pioneer battalions), four Indian cavalry regiments, three armoured car companies, 17 British

and Indian artillery batteries and seven RAF squadrons. Alan Warren notes that: 'This was the heaviest concentration of troops and police to population anywhere in the Indian Empire.'⁵⁹ The proposal aimed to release 22-25 Indian battalions (including one pioneer battalion), one cavalry regiment and 12½ artillery batteries for an increase of three RAF squadrons (including two heavy transport bomber squadrons).⁶⁰ The proposal also noted with some optimism that economies in administrative units and services (e.g. headquarters staff administrative services and engineer services), as well as equipment, transport assets and reserves could be made. It was also likely that a revised force structure could see further cutbacks in training units (four-five Indian training battalions), schools, hospitals and veterinary clinics. However, the proposal notes:

*The Air Staff scheme has been prepared on a most conservative basis and the regular military forces retained are relatively far larger than those which have hitherto been found necessary elsewhere. The Air Staff wish, on this point, to emphasise that their proposals have been deliberately framed on the most conservative scale in order to allay any possible apprehension that the methods advocated by them entail any undue risk. They also wish to accord with the policy of the Government of India that any change on the frontier shall be made most carefully and gradually.*⁶¹

In fiscal terms, the Air Staff proposal amounted to an annual saving of Rs. 3,40,66,666 (£2,555,000), with an increase of yearly expenditure of Rs. 82,13,333 (£616,000). Therefore, the net annual saving was Rs. 2,58,53,333

(£1,939,000). The additional expenditure of three squadrons would be Rs. 1,54,66,666 (£1,160,000), with an supplementary Rs. 53,33,333 (£400,000) to be spent on accommodation. This was appealing as the frontier was becoming a bottomless pit down which the government's budget was slowly disappearing. However, while many civil officials were in favour of reducing the extent of the administration's financial commitment on the frontier, the idea of the army losing its authority as the primary striking force was a different matter. Likewise, the subordination of the political authorities to the RAF in times of crisis would also prove challenging. The proposal cautions with a degree of apprehension: *It will be seen that these proposals involve certain changes in the military commands in India. The Air Staff do not, however, consider that these will raise any insoluble problems in the system of command or administration and believe that an organisation can be devised which, while securing conditions necessary to the most efficient use of air forces, will fully safeguard the position or the responsible military authority.*

Nor do they see cause for the apprehensions sometimes expressed at the prospect of an air officer undertaking command of military forces. The Air Officer Commanding does not require to exercise tactical command, but needs only to allot tasks and issue through his Officer Commanding Military Forces the necessary instructions to ensure co-ordination.

While they feel sure that a satisfactory system on the lines laid down above can be devised, they have, on the other

*hand, had ample experience of the grave disadvantages which may, and do, arise under the present anomalous system. In their view this system has only too clearly resulted in the past in a serious decrease in the efficiency of the air power available in India and is in grave need of alteration.*⁶²

However, like Trenchard's proposal in 1925, opinions remained divided among soldiers and politicians alike. This was principally because the proposal suffered from two main difficulties: it sought to enforce a colonial policy that was fast becoming insupportable and outdated; and air control proved of only limited application on the precipitous and broken frontier.

Economies at the Price of Reduced Security?

The Air Staff proposal afforded a number of recognisable and appealing benefits. Not only did it offer financial savings without reducing security, it also allowed the release of a considerable number of units permanently based on the frontier, as well as the potential for a number of administrative and logistic economies. These, it was argued, could be employed usefully elsewhere; ideally for internal security duties, where existing levels were deemed insufficient. In addition, the two new heavy transport bomber squadrons could, when not required on the frontier, constitute a very valuable asset ferrying troops on internal security duties or evacuating endangered civilians or wounded personnel. Whilst the latter option was attractive, not all towns possessed a suitable landing ground with

petrol instillations to permit aircraft to support such requests. Their provision, maintenance, and security would be inescapably expensive.⁶³ However, it was widely recognized that the prompt arrival of troops, even a small force at first, was the most valuable factor in restoring confidence and order to any disturbance. The heavy transport bomber squadrons offered an impressive reach of 400-500 miles in five hours' flight, compared with the ponderous advance of military columns.

Tribal control was only a part of the problem of the defence of India. The proposal also provided the government with a twofold increase in available striking power. This was a central component of any future confrontation with Afghanistan, and many felt that existing resources were inadequate. A request for two additional bomber squadrons had already been made in 1927 to remedy this perceived deficiency.⁶⁴ Moreover, an increase in striking power would also provide a steadying influence on the tribesmen, due to an increase in flights over tribal territory. Both uses were not mutually exclusive. Aircraft available for instant use in tribal control could, without changing their normal locations, be immediately re-allocated objectives across the international border. The plan for war against Afghanistan saw an initial air offensive lasting 15 days approximately, permitting the mobilization of the Field Army, including reinforcements from overseas, to take place. The proposal confirms:

The Air Staff are confident that this initial air offensive will prove overwhelming and decisive. At their

*present strength the air forces in India could deliver an attack of over 20 tons per day against the military objectives, barracks, arsenals, aerodrome, &c., in Kabul, Jalalabad, Ghazni and other Afghan centres. No objective moreover is so favourable for air action as a second-class native army. This air offensive is our first means of striking a heavy blow at Afghanistan. It is ready at any time, in all seasons. It is the only blow which can be delivered at Kabul itself for six months.*⁶⁵

However, should the air offensive fall short, necessitating an advance on Kabul, the cost would be considerable. 'Lord Rawlinson, when Commander-in-Chief estimated its cost at 100 crores of rupees (some £70 million), exclusive of the reinforcements and other assistance required from the Home Government.'⁶⁶ The cost of the additional squadrons would amount to a fraction of this approximation. It is little wonder that the proposal suggests that every means of increasing a decision for the uplift of striking power should be taken. Moreover, events of 24 May 1919, when the Afghan capital was bombed by a single elderly Handley Page V-1500, piloted by Captain Robert 'Jock' Haley, causing panic and the evacuation of about half the inhabitants, provided useful supporting evidence; the raid was an important factor in producing a desire for peace at the headquarters of the Afghan government.⁶⁷ Likewise, 31 Squadron's attack against the military quarters in Jalalabad and the contribution of aircraft to raising the siege of Thal produced equally positive results. Therefore, the proposal to double the striking power, without entailing any expenditure

on external defence, could only be viewed positively – especially as it would come about as a consequence of additional aircraft for frontier control. An increase in aircraft would also provide a formidable deterrent to dissuade Afghanistan from going to war, although many were opposed to the idea of strategic bombing.⁶⁸

The proposal also highlighted the realities of having a legation in Kabul and, therefore, the necessity for a permanent troop-carrying capability for the movement of personnel and casualty evacuation. Only a year and a half previously, the British Minister in Kabul, Sir Francis Humphreys, an ex-RAF pilot, had requested an air evacuation of personnel due to the increasing pressures of civil war in the Afghan capital.⁶⁹ However, in 1928-29, the RAF in India possessed no troop-carrying capability, and appropriate aircraft had to be flown 2,500 miles from Iraq to carry out the evacuation. Fortunately, the tactical situation permitted the recovery of 586 personnel from 13 nationalities and 24,193 lbs of baggage to take place over several weeks, ending on 25 February 1929, when the British Minister was the last European to be air-lifted out. The proposal posits: 'A very serious situation which might have entailed extensive operations, great loss of life and vast expenditure was thus obviated.'⁷⁰ However, despite immediate requests, the emergency in Kabul resulted in no uplift of troop-carrying aircraft, and the RAF in India were just as ill-equipped to meet a similar commitment in 1930 as they were in 1928-29. With no other means of meeting the commitment, the proposal presented the pressing need

for an adequate number of troop-carrying aircraft. Despite raising the issue of cost, the scheme again pointed out that substituting aircraft for military units would see a reduction in overall defence expenditure.

The Air Staff Scheme also looked beyond the immediate challenges facing the government. The proposal notes: 'India may in the future find herself involved in an Imperial War beyond her frontier against a power possessing air forces. In such a war paucity of communications on the ground would delay a collision between the land forces for several months, during which army reinforcements would arrive *ex-India*. There would be no such delay in air attacks against India.'⁷¹ As early as 1921 the Afghans raised the possibility of buying British aircraft. Although indifferent to the request, officials recognised that if Britain did not supply the machines, another country most certainly would.⁷² In due course, Italy sold the Afghans a small number of aircraft. The proposal not only highlighted the moral effect of air attacks, but also the reality that air ranges were steadily increasing and that advanced airstrips could be improvised without too much difficulty. 'It is, therefore, unsound to depend for defence against these air attacks upon air reinforcements arriving *ex-India*, and it is important for India to provide on her own soil as large air forces as she can afford, since these initial attacks must be met mainly from her own air forces.'⁷³ Therefore, highlighting the dual role of aircraft, the proposal noted that while controlling the frontier, an increase in machines was

essential if India became engaged in the future with a foreign power possessing air forces.

Moreover, at a time when there was a perceived deficiency in both the strength and equipment of the Field Army to carry out the defence of India, there were also question marks over its level of preparedness. The proposal states unmistakably: 'The many deficiencies in Indian military preparedness are described in detail in C.I.D. Papers Nos. D.I. 8 and D.I. 19, to which the attention of the Committee is invited. The list is formidable.' The Air Staff scheme, therefore, suggested an all-round improvement in the efficiency of the military machine as a whole. Likewise, compensatory reductions in Army units and services – necessary in order to establish the scheme with no additional expenditure – made possible the disbandment of the less efficient units. Significantly, the reduction in the size of the Army in 1923 resulted in some notable improvements in efficiency. Deficiencies in personnel and material of the striking force were made good by the disbandment of other units.

In addition, subordinating all forces to the A.O.C. promised an immediate authority to act by speeding up the decision making process. It was widely recognised on the frontier that tribal disorder, unless immediately acted upon, could rapidly escalate out of control. The existing process was languid, often requiring the approval of a number of authorities, and arguably one of the biggest obstacles to effective air control. Slessor notes: 'It is perhaps one of the

greatest merits of the Air Method (in countries where it can be applied) that the Air can act so quickly that it can – and constantly did – nip these troubles in the bud and prevent them assuming serious proportions.’ He goes on to caution: ‘It is, however, no good being able to strike right in the heart of a tribal area within literally a few hours of a decision being made, if it takes weeks of correspondence and reference to all sorts of remote authorities thousands of miles away before that decision can be obtained.’⁷⁴

Out of Tune with Modern Ideas?

As was to be expected, not all agreed with the merits of the proposal and, after considerable deliberation, the initiative, like its predecessors, was rejected. ‘The Looker-On’ recalls in ‘The North-West Frontier in the Thirties–I’ that the government turned down the RAF offer on the following grounds:

- The real solution to the Frontier problem was giving the tribesmen something more useful and lucrative to do than shooting each other and raiding the settled areas. The modified forward policy, bringing with it roads, lorry transport and a good deal of employment was working slowly to that end: it would be a retrogressive step if the tribesmen were to see nothing of the Raj but bombing planes.
- The Irregular Corps, efficient as they were within their limitations, were wholly Pathan and might not be entirely reliable if Regular troops were withdrawn. (Airborne troops were not yet envisaged).
- Whatever their success in the open plains of Iraq, air operations, in

this very close and difficult country, would become less effective as the tribes became accustomed to them and learned to mitigate their effects.

- Public opinion at home, more or less indifferent to ground operations on the Frontier, might be emotionally upset by reports of the RAF bombing ‘helpless villagers.’⁷⁵

Aside from the official reasons given, there were more deep-rooted motives not to support the proposal. As early as March 1923 India’s Foreign Secretary, Sir Denys Bray, warned: ‘Come what may, civilisation must be made to penetrate these inaccessible mountains, or we must admit that there is no solution to the Waziristan problem, and we must fold our hands while it grows inevitably worse.’⁷⁶ Relying on a small number of carefully chosen political officers and a handful of British officers serving with the scouts was deemed insufficient to encourage good government to take hold and grow on the frontier.

The accepted view was that the solution to the tribal problem depended on civilising influences, achieved through regular, targeted and structured contact. Over time it was hoped that the tribesmen would abandon their unruly ways and gradually accept peaceful incorporation. This was achieved by opening-up hostile territory by building roads and introducing the tribes to the possibilities of profit by peaceful trade; although this was a long and slow process, partly because of tribal suspicion and partly because of the difficult terrain. It was no longer seen as acceptable to punish

the tribes without redeeming them from their savage ways as required by nascent penal theory. At its centre, this approach required good and safe ground lines of communication; something that RAF could not guarantee from the air. However, there were insufficient funds for public works or social services to support the policy. Only allowances and military service put legitimate money in the hands of the tribesmen. The reality was that there were inadequate resources to civilise the frontier.⁷⁷ This was control on the cheap and something the RAF could replicate.

Moreover, the very presence of troops, it was suggested, could deter unrest. As one former Commander in Chief cautioned, 'It is not wise to withdraw our troops from the actual sight of the people.'⁷⁸ The political risks of such a move were great in the eyes of many, even among more liberal minds. Moreover, the British-Indian Army's frontier garrisons provided routine support and a much needed steel backbone for the irregular forces in times of hardship. 'The Looker-On' concludes his summary by positing: 'One cannot help feeling that, valid they [the official reasons] were, to them should be added some military resentment at RAF empire-building and a determination by the Army to keep the leading part in the drama to itself, allowing the RAF only a supporting role.'⁷⁹

The stakes were particularly high for the army. In the inter-war period British governments, in a drive to cut outlays, had reduced the service budgets. The army's finances had been reduced from £36.7 million

in 1925 to £32 million in 1930.⁸⁰ Losing its pre-eminence on the frontier would undoubtedly lead to more fiscal reductions. However, Group Captain P.W. Gray points to another more profound reason: 'The government of India was loath to embark on the risky course of entrusting vital frontier defence to new-fangled aeroplanes – particularly if the *quid pro quo* was widespread unemployment among Indian army officers and a reduction in their treasured policy of road building.'⁸¹

Unsurprisingly, the proposals for air-control primacy were coldly received by the army at every level. Such a reaction was hardly surprising under the circumstances. The air staff comprised of only a handful of relatively junior and inexperienced officers, in marked contrast to the hundreds in the army headquarters, many of whom had a lifetime of understanding of traditional frontier methods. To them, the established system of operation on the frontier, although slow, was the soundest method that could be employed for this type of enemy and terrain. Moreover, as Sir John Slessor cautioned: 'We are a conservative people and the impact of a new idea is always a painful experience and usually gives rise to an initially unfavourable reaction.'⁸² More fundamentally, bombing villages in order to punish a tribe for the actions of a minority seemed not only morally doubtful – on the grounds that it was liable to inflict casualties on guilty and innocent alike, and even on women and children – but also politically risky.⁸³ Aerial bombings were becoming a source of embarrassment to the

government. Destroying villages and starving people into submission was simply unacceptable. 'By the early twenties strong criticism had begun to appear both in the Indian vernacular and in the British national press of the 'inhumane' bombing of the tribes. Quixotically, the critics almost invariably accepted the need to mount punitive ground operations to protect settled territory yet ignored the testimony of the sheer fact that tribal losses were usually much greater in army operations than in air attacks.'⁸⁴ Other commentators criticized air control because its effects were transitory. Attacks against villages had little or no long-term effect on the tribesmen. Continuous operations against a nomadic and cunning enemy, with limited possessions, at best achieved a temporary result. However, it was a mistake to believe that a temporary outcome which spared the lives of the tribesmen was any less effective than one which inflicts heavy losses.

After a good deal of ill-tempered argument – which marred to some degree inter-Service relations – the real question became not how the air arm could be used in substitution for the army on the frontier, but instead how could the RAF better cooperate with the land forces they were supporting for policing and controlling tribal territory. Paradoxically, this was exactly the same position General Sir Claud Jacob, K.C.B., K.C.S.I., K.C.M.G., Commander-in Chief in India, reached after analyzing 'Pink's War' of 1925. In the introduction to the official report he notes: 'Satisfactory though the results of these operations have been, I am of the opinion that a

combination of land and air action would have brought about the desired result in a shorter space of time, and next time action has to be taken, I trust that it will be possible to employ the two forces in combination.'⁸⁵

Notes

¹ D.E. Omissi, *Air Power and Colonial Control: The Royal Air Force, 1919-1939* (Manchester: Manchester University Press, 1990), 48.

² Of course one might ask the question: is not the U.S. attempting to do a version of the same thing in Waziristan today using Predator drones?

³ D.S. Richards, *The Savage Frontier* (London: Pan Books, 1990), 181.

⁴ A. Skeen, *Passing It On – Short Talks on Tribal Fighting on the North West Frontier of India* (Aldershot: Gale & Polden, 1932), 52.

⁵ H.Le M. Brock, "Air Operations on the N.W.F., 1930," *Journal of the Royal Central Asian Society* 19 (1932): 24.

⁶ J. Martineau, *Life of Sir Bartle Frere* (London: John Murray, 1895), 1: 363-368.

⁷ D.J. Dean, "Airpower in Small Wars: The British Air Control Experience," *Air University Review* 34 (July-August 1983): 3.

⁸ C.J. Mackay, "The Influence in the Future of Aircraft upon Problems of Imperial Defence," *Journal of the Royal United Service Institution*, vol. 67 (February to November 1922): 299.

⁹ J. Slessor, *The Central Blue: Recollections and Reflections* (London: Cassell & Co. Ltd., 1956), 55.

¹⁰ *Ibid.*, 62.

¹¹ Major W.J. Cumming recalls conducting a search of a frontier village: 'The highest [watch] tower evidently belonged to a well-to-do

Mahsud and no doubt about it, it was the one clean building we saw and had some large, well-ventilated rooms adjoining it, and on the flat roof he had collected about twenty or thirty dud bombs, dropped by the Royal Flying Corps. With these, by spreading them out at regular intervals, he had decorated the parapet of his extensive dwelling' W.J. Cumming (Ed. J Stewart), *Frontier Fighters: On Active Service in Waziristan* (Barnsley: Pen & Sword, 2010), 91.

¹² A.S. Ahmed, "An Aspect of the Colonial Encounter in the North-West Frontier Province," *Asian Affairs* 65 (1978): 324.

¹³ For example, 1 January 1930 in the Gregorian calendar is 1 *Sha 'baan* 1348 A.H.

¹⁴ A.M. Roe, *Waging War in Waziristan: The British Struggle in the Land of Bin Laden, 1849-1947* (Kansas: University Press of Kansas, 2010), 208.

¹⁵ C.B.E. Burt-Andrews, "Guarding the Mountain Wall: Air-power on the Northwest Frontier of India," *Hawk Magazine*: 213-14.

¹⁶ N.H. Bottomley, "The Work of the Royal Air Force on the North-West Frontier," *Journal of the Royal United Services Institute* 193 (1939): 779.

¹⁷ C.F. Andrews, *The Challenge of the North-West Frontier* (London: George Allen & Unwin, 1937): 124.

¹⁸ F.S. Keen, "To What Extent Would the Use of the Latest Scientific and Mechanical Methods of Warfare Affect Operations on the North-West Frontier of India?" *Journal of the United Service Institution of India* 53, no. 233 (1923): 400.

¹⁹ E.R. Ludow-Hewitt, Air Staff Memorandum No. 52, "Air Control," a lecture by the Deputy Chief of the Air Staff at the Imperial Defence College, London (April 1933), 3.

²⁰ Ibid.

²¹ J. Slessor, *The Central Blue*, 56.

²² E.R. Ludow-Hewitt, "Air Control," 6.

²³ The tribal directory was a form of encyclopedia which contained the resources, population and other data of every known village in the frontier region. It was a book of reference used by military intelligence as well as by the political authorities.

²⁴ J. Slessor, *The Central Blue*, 66.

²⁵ N.H. Bottomley, "The Work of the Royal Air Force on the North-West Frontier," 771.

²⁶ J. Slessor, *The Central Blue*, 57.

²⁷ E.R. Ludow-Hewitt, "Air Control," 11.

²⁸ IOL MSS EUR E 238/24 (Reading Papers), no. 50, Sir John Maffey, 'Unsolicited Views on an Unsolvable Problem,' 2 August 1922, 377.

²⁹ B. Robinson, *Crisis on the Frontier: The Third Afghan War and the Campaign in Waziristan 1919-20* (London: Spellmount Ltd., 2004), 243.

³⁰ R.A.F. Museum, Salmond papers, B2690 – "Report by Air Vice-Marshal Sir John Salmond, K.C.B., C.M.G., C.V.O., D.S.O., on the Royal Air Force in India," dated August 1922.

³¹ C. Bowyer, *RAF Operations 1918-38* (London: William Kimber & Co. Ltd., 1988), 163.

³² J. Slessor, *The Central Blue*, 35-6.

³³ R.A.F. Museum, Salmond papers, B2690 – "Report by Air Vice-Marshal Sir John Salmond K.C.B., C.M.G., C.V.O., D.S.O., on the Royal Air Force in India," dated August 1922.

³⁴ The RAF was the fiscal responsibility of the Government of India and came under the operational control of the Commander in Chief in India as Army Member of the Viceroy's Council. J. Slessor, *The Central Blue*, 34.

³⁵ In both the number and cost of maintenance of troops of occupation,

and in the cost of punitive operations

³⁶ B. Robinson, *Crisis on the Frontier*, 244.

³⁷ P.A. Towle, *Pilots and Rebels: The Use of Aircraft in Unconventional Warfare, 1918-1988* (London: Brassey's Defence Publishers, 1989), 40.

³⁸ B. Robinson, *Crisis on the Frontier*, 236.

³⁹ C. Bower, *RAF Operations 1918-38*, 161.

⁴⁰ A. Warren, *Waziristan, The Faqir of Ipi, and the Indian Army* (Oxford: Oxford University Press, 2000), 48.

⁴¹ P.A. Towle, *Pilots and Rebels*, 40.

⁴² *Ibid.*, 41.

⁴³ C.F.A. Portal, "Air Force Co-operation in Policing the Empire," 348.

⁴⁴ C.J. Mackay, "The Influence in the Future of Aircraft Upon Problems of Imperial Defence," *Journal of the Royal United Service Institution*, vol. LXVII (February to November, 1922): 310.

⁴⁵ J. Slessor, *The Central Blue*, 56.

⁴⁶ C. Bowyer, *RAF Operations 1918-38*, 166.

⁴⁷ J. Slessor, *The Central Blue*, 34.

⁴⁸ C.B.E. Burt-Andrews, "Guarding the Mountain Wall," 212.

⁴⁹ N.H. Bottomley, "The Work of the Royal Air Force on the North-West Frontier," 769-780.

⁵⁰ J. Slessor, *The Central Blue*, 121.

⁵¹ Air Commodore N.H. Bottomley notes: 'Some people are apt to think that we exercise a measure of control over all tribal territory. There are admittedly certain tribal areas in which a high degree of law and order reigns, so that Europeans can move about in complete safety ... But I think I am right in saying that no white man, except one who forced-landed in an aircraft, has been in the heart of the Tirah since 1897; no European moves in Mohmand country or Bajaur unless with a military force, and now no Briton moves about even on the roads of Waziristan unless he has a strong

scout or military protection.' N.H. Bottomley, "The Work of the Royal Air Force on the North-West Frontier," 770.

⁵² These came from the British-Indian Army's frontier garrisons – brigade groups based on Peshawar, Nowshera, Kohat, Bannu, Razmak and Wanna.

⁵³ Air Historic Branch, "Memorandum by the Air Staff: Air Staff Scheme for the Control of the North-West Frontier of India," 1 July 1930, 1.

⁵⁴ *Ibid.*

⁵⁵ *Ibid.*

⁵⁶ The issue of primacy had always been a source friction and resentment. In his Despatch No. 3, Secret, dated 9 August 1923, Lord Peel referred to the danger of sound old frontier methods falling into disuse, owing to the power that aircraft placed in the hands of political officers to interpose spasmodically and dramatically in tribal matters. Peel recognized the possibility of misuse inherent in airpower, unless carefully controlled. In a despatch from the Government of India (Foreign and Political Department), (No. 11 of 1925), to the Secretary of State for India, 15 October 1925, it was noted that: 'It is largely for this reason that we have thought it advisable to retain the control of all forms of active air operations almost entirely in our hands. Expect when our forces are actually being attached – and there may be other cases of emergency where it may be essential to act immediately – aircraft may not be employed offensively without our previous and specific sanction.'

⁵⁷ Air Historic Branch, "Air Staff Scheme for the Control of the North-West Frontier of India," 4.

⁵⁸ *Ibid.*, 6.

⁵⁹ A. Warren, *Waziristan, the Faqir of Ipi, and the Indian Army*, 62.

⁶⁰ The cost of two heavy bomber transport squadrons was Rs. 1,28,00,000 (or £960,000); the cost of the additional squadron was Rs. 26,66,666 (or £200,000).

⁶¹ Air Historic Branch, "Air Staff Scheme for the Control of the North-West Frontier of India," Appendix 1.

⁶² *Ibid.*, 4.

⁶³ On the other hand, a network of runways throughout the frontier had a number of additional advantages: medical dispensaries could be established and visited at regular intervals by a doctor and his medical staff; more serious cases could be transported by air to hospital; and urgent letters or requests could be rapidly transited and addressed. Above all, political officers could visit the districts more frequently to settle disputes, give advice, and keep the government informed of local conditions.

⁶⁴ P.A. Towle, *Pilots and Rebels*, 39.

⁶⁵ Air Historic Branch, "Air Staff Scheme for the Control of the North-West Frontier of India," 7.

⁶⁶ *Ibid.*

⁶⁷ Despatch by his Excellency General Sir Charles Carmichael Munro on the Third Afghan War, 1 November 1919 (Simla, 1919). Ironically, the aircraft never flew again due to the discovery of extensive damage by termites to its wing spares.

⁶⁸ P.A. Towle, *Pilots and Rebels*, 37.

⁶⁹ See N. Macmillan, *Great Flights and Air Adventures* (London: G. Bell, 1964) and A. Barker and R. Ivelaw-Chapman, *Wings Over Kabul* (London: William Kimber Co., 1975).

⁷⁰ Air Historic Branch, "Air Staff Scheme for the Control of the North-West Frontier of India," 8.

⁷¹ *Ibid.*, 8.

⁷² P.A. Towle, *Pilots and Rebels*, 38.

⁷³ Air Historic Branch, "Air Staff Scheme for the Control of the North-West Frontier of India," 8.

⁷⁴ J. Slessor, *The Central Blue*, 65.

⁷⁵ The Looker-On, "The North-West Frontier in the Thirties – I," *The Army Quarterly* (January 1969), 254.

⁷⁶ Bureau of Public Information, *India in 1925-26* (Calcutta, 1925), 203-4.

⁷⁷ N. Charlesworth, *British Rule and the Indian Economy 1800-1914* (London: The Macmillan Press Ltd., 1982), 66-71.

⁷⁸ D. Omissi, *The Sepoy and the Raj: The Indian Army, 1860-1940* (London: Macmillan, 1994), 215 (note 1).

⁷⁹ The Looker-On, "The North-West Frontier in the Thirties – I," 254.

⁸⁰ P.A. Towle, *Pilots and Rebels*, 35.

⁸¹ P.W. Gray, "The Myths of Air Control and the Realities of Imperial Policing," 27.

⁸² J. Slessor, *The Central Blue*, 55.

⁸³ Sir John Slessor notes: "There was no truth whatever in the charges of brutality or of special suffering imposed on women and children, and there is no evidence that air action created special resentment or rancour – indeed the reverse was the truth.

We went out of our way to minimize the loss of life and human suffering that is inevitable in any form of warfare – and, be it noted, these are small wars that I am describing." J. Slessor, *The Central Blue*, 67.

⁸⁴ C.B.E. Burt-Andrews, "Guarding the Mountain Wall," 213.

⁸⁵ E. Ellington, *The London Gazette*, supplement, 17 November 1925, 7595.

Airpower in the Mau Mau Conflict: The Government's chief weapon

By Wing Commander Steve Chappell

The efficacy of airpower in counter insurgencies is the subject of fierce debate. This paper will examine the contribution of the RAF to the Mau Mau conflict in Kenya between 1953 and 1956. This is a subject which has been shrouded in mystery and inaccurately reported in some areas. The paper makes the case that the RAF's involvement in this conflict was considerable and in many respects, was viewed as the Government's chief weapon for tackling the insurgents. As such, although it occurred almost sixty years ago, the RAF's involvement reveals a number of lessons for airpower's use in counter insurgencies today.

Introduction

In October 1952 Sir Evelyn Baring, Kenya's Governor, declared a state of emergency and requested the deployment of a Battalion of British soldiers to help stop the rising attacks on loyalist Kenyans and European settlers. Although more soldiers soon arrived amidst claims the emergency would be over by Christmas,¹ it was clear more security forces were required as the situation rapidly deteriorated into civil war. Ultimately, it took further deployments of British troops and a considerable RAF presence before the Mau Mau insurgency was militarily defeated in October 1956. However, although many accounts exist of the British Army's contribution to this counterinsurgency - the most recent claiming that a culture of barbarism was all-pervasive,² little is known of the RAF's involvement. Indeed, of the few accounts available, many contain inaccuracies; one claims 'Lancasters' bombed the Mau Mau³ and another that four RAF Harvards, fourteen light aircraft of the Kenya Police Reserve Air Wing (KPRAW) and a Squadron of Lincoln bombers were already in Kenya when the emergency began.⁴ However, evidence in the National Archives reveals that Lancaster bombers were not used in this conflict, the Harvards did not arrive until March 1953, the KPRAW had only five aircraft in late 1952 and the Lincolns did not deploy to Kenya until one year after the emergency began; flying their first mission on 18th November 1953.⁵

At the start of the emergency, the RAF presence in Kenya was one Proctor, two Ansons and a Valetta based at RAF Eastleigh. The Proctor

was underpowered for operations at altitude and the Ansons, old and unreliable.⁶ The only other aircraft in Kenya at this time were five Piper-Pacers in the KPRAW which were not under RAF command and although they were later modified to carry four 20lb bombs, had no offensive capability in the early stages of the emergency. As the security situation deteriorated, it became clear airpower could make a contribution and four Harvard aircraft arrived at the end of March 1953, to be increased to eight on 1st July. By early 1955, the RAF's presence had swelled to eight Lincoln bombers, eight Harvards, two Austers (used for sky-shouting tasks), one Sycamore helicopter and two Pembrokes. A detachment of two Meteor PR10s from No. 13 Squadron undertook photographic reconnaissance (PR) from August 1954 onwards and up to six Vampires from No. 8 Squadron, Aden were regularly detached from April 1954 to the Colony.⁷

Further inaccuracies exist regarding airpower's impact in Kenya; with Waters claiming the RAF's presence alienated the local population and also had little influence on the Mau Mau.⁸ However, between June 1953 and October 1955, the RAF provided a significant contribution to the conflict and, because the Army was preoccupied with providing security in the reserves, it was the only Service capable of both psychologically influencing and inflicting considerable casualties on the Mau Mau in the vast, inaccessible forests around Mount Kenya and the Aberdare Mountains.⁹ This proved crucial and, as the Government noted; '... whilst ground forces are being

primarily directed against targets in the Reserves, heavy bombers and Harvards represent the chief weapon in our hands for attacking terrorists in the forest.¹⁰ Their success was fully recognised by General Erskine,¹¹ who expressed his appreciation when he addressed a parade at RAF Eastleigh in April 1955, stating the alternative would have been the employment of three Regiments of Artillery and another Infantry Brigade, neither of which: '... would have been a good answer and both considerably more expensive.'¹²

This essay reveals the truth about how airpower was employed in the Mau Mau conflict – a subject that has, until now, been shrouded in mystery and inaccurately reported. It finds that the RAF's contribution to a conflict occurring almost sixty years ago proffers a number of lessons for airpower's employment today in counterinsurgency conflicts. Of

course, many argue whether airpower can be used against an insurgency which, unlike an industrialised state, is an element of resistance that Clausewitz noted exists everywhere and nowhere - being nebulous and elusive, never materialising as a concrete body, avoiding major actions and preferring to adopt a policy of scattered resistance where: 'Like smouldering embers, it consumes the basic foundations of the enemy forces ... [trying not] to pulverise the core, but nibble at the shell and around the edges.'¹³

Figure one shows how airpower was used against the Mau Mau. Of the four fundamental air and space power roles, only 'Attack' (particularly counter-land and influence operations) and 'Intelligence and Situational Awareness' (more commonly known as ISTAR) were used. Elements of the 'Mobility' role were used but 'Control of the Air' was

Leadership	Key production	Infrastructure	Population	Fielded forces
Kenyatta and key political officials: (Op JOCK SCOTT) C2 elements in Nairobi (Op ANVIL) Gang leaders in forests	Political & Financial network in Nairobi (Op ANVIL)	Stocks of food deep in forests Supply routes to and from forests Mau Mau supporters transporting food supplies	Kikuyu loyalists European settlers Kikuyu 'undecided'	Gangs in the forests Gangs in the reserves (after 1 st June 1954; Op MUSHROOM)
Targeted by: Gang leaders only by Kinetic and ISTAR Aircraft Used: Harvard, Meteor, Lincoln, Vampire, Piper-Pacer	Not targeted by air - no ISTAR used	Both only indirectly targeted by Bombing gangs Some ISTAR Aircraft Used: Lincolns Piper-Pacer, Vampire, Harvard	Targeted by: Leaflet drops/Air presence, avoidance of Civilian Casualties Aircraft Used: Lincoln, Valettea, Harvards	Targeted by: Kinetic: pre-planned bombing, close air support, PSYOPS: Shows of force, leaflet drops, Sky-shouting, ISTAR in forests and the reserves to help Home Guard and Land forces Aircraft Used: Harvard, Lincoln, Vampire, Auster (PSYOPS), Meteor, Pipers (ISTAR)

Figure One: How airpower was used in the Mau Mau conflict 1953-55.

not, as the insurgents were unable to effectively challenge the RAF's air superiority.¹⁴

Leadership

The Mau Mau leadership ring comprised its political figures, the command and control (C2) elements in Nairobi and the gang leaders in the forests. The political leadership was imprisoned before the RAF deployed to Kenya and interestingly, the movement then became more radical as younger and more militant Mau Mau, whose extremist ideas had been previously suppressed by the old leadership, were now free to adopt a more revolutionary course.¹⁵ Likewise, air played no role in targeting those leaders based in Nairobi that provided the movement's C2 and political direction as this was eliminated during Operation ANVIL in April 1954 when over 30,000 suspected Mau Mau operatives were evicted from Nairobi to detention camps. This was undertaken entirely by the Army and although the RAF could have assisted with ISTAR duties, it was not involved.¹⁶

Gang leaders in the forests were the only element of this ring targeted by air and included key figures like Stanley Mathenge, Samuel Mwangi and Dedan Kimathi. Due to the thick forest canopies, it was difficult to track gangs by air and, in the 1950s, the RAF only had a limited ISTAR capability with which to find, fix, and strike¹⁷ the gang leaders. Therefore, no specific leadership strikes were mounted. Instead, pre-planned bombing missions were conducted on areas where it was believed key leaders were thought to be present.¹⁸

This policy was successful and undoubtedly accounted for the disappearance of Stanley Mathenge in 1955.

Key Production and infrastructure

The Mau Mau's key production target was its political network in Nairobi which provided a rich source of recruits, arms, ammunition and money and this was eliminated by the Army during Operation ANVIL as previously mentioned. The Mau Mau's infrastructure targets were the fixed supply dumps of food and ammunition located deep in the forests. Insurgents venturing outside the forests to collect food were targeted; mostly when they grouped together and waited on the forest fringes for dusk to arrive before venturing out.¹⁹

Warden noted the Mau Mau conflict was an example of where interdiction may well prove difficult to achieve against forces that do not require the same supply lines as nations, stating: 'Obviously, a force that needs little or nothing to exist or fight does not require the kind of supply lines that make interdiction worthwhile.'²⁰ Targeting this infrastructure ring indirectly by bombing the area where it was believed the gangs were operating, achieved results. Interrogation reports of surrendered insurgents revealed continuous air bombing forced them to stay on the move and severely disrupted their food supplies. Indeed, many cited hunger and the threat of being killed by bombing as the two main reasons for surrendering.²¹

Population

Examining how airpower 'targeted'

the population reveals an important lesson for its use in counterinsurgencies; it can help secure the population from the insurgent's influence and thereby achieves the most important objective; winning the hearts and minds of the indigenous people.²² Airpower helped to achieve this by targeting the loyalist Kikuyu, the European Settlers and those Kikuyu defined as the 'undecided'.²³ Both the loyalist and the 'undecided' Kikuyu were targeted by direct psychological operations (PSYOPS). Leaflets depicting the Government's victories over the Mau Mau were dropped across the reserves and this reassured the loyalists the Government was winning, thereby emboldening their spirit. The 'undecided' were also influenced by leaflets dropped showing graphic pictures of Kikuyu women and children hacked to death in incidents like the Lari massacre in March 1953; where 97 loyalists were murdered. This had a profound effect on the 'undecided' group, with many openly ceasing their support for the Mau Mau and some deciding to fight them by joining the Government's loyalist Home Guard.

Equally, the presence of Lincoln, Harvard and Vampire aircraft had the psychological effect of convincing all three population groups they would be protected and that the Government was committed to defeating the insurgency. As the Chief Inspector of Police in Kangema stated: '...the presence of aircraft proved the power of the Government more than anything else'²⁴ and although the importance of maintaining a continuous and effective presence on the ground in counterinsurgencies is

clear, a dominating aerial presence was equally effective in Kenya given the Kikuyu were unaccustomed to seeing aircraft. Indeed, considering that the 'undecided' group will usually wait to see which side is likely to prevail before declaring its support, airpower's presence arguably persuaded many in this group that the Mau Mau, armed with home-made weapons, could not win against the Government's military power.

However, the fundamental lesson arising from the use of airpower in the Mau Mau conflict was how crucial it is to apply and then enforce a strict policy of avoiding civilian casualties. Bennett argues that in the early stages, repression and violence were encouraged from Cabinet level down and the Army's approach was to crush the insurgency heavily. Indiscriminate targeting was commonplace and top-level Commanders exercised a loose grip on Soldiers' behaviour.²⁵ Whilst this may have been true for the Army, the archival evidence reveals that senior RAF Officers and members of the Cabinet were fully attuned to the need to avoid civilian casualties from air action. This was first seen when the rules concerning the use of Harvard aircraft were issued: '... [aircraft] will not take armed offensive action against any target outside the prohibited areas. It is emphasised that it is of the greatest importance that our own forces and loyal Africans should not be subjected to offensive action from the air.'²⁶ Likewise, another report reveals that both Erskine and the Kenyan Government did not support indiscriminate bombing of

Position	Name	Dates in post
Prime Minister	Sir Winston Churchill	26 th October 1951 - 7 th April 1955
	Sir Anthony Eden	7 th April 1955 - 10 th January 1957
Secretary of State for the Colonies (aka The Colonial Secretary)	Rt Hon Oliver Lyttelton	28 th October 1951 - 28 th July 1954
	Sir Alan Lennox-Boyd	28 th July 1954 - 14 th October 1959
Governor of Kenya	Sir Evelyn Baring	31 st September 1952 - 10 th October 1959
Deputy Governor	Sir Frederick Crawford	7 th June 1953 - 1958
GOC-in-C East Africa Command (The Commander of all British Forces in Kenya - known as the Director of Operations before Erskine arrived).	Gen Sir William Hinde	1 st Feb 1953 - 7 th June 1953
	Gen Sir George Erskine	7 th June 1953 - 2 nd May 1955
	Gen Sir Gerald Lathbury	2 nd May 1955 - 1957
Chief of the Imperial General Staff (CIGS)	Gen Sir John Harding	1 st November 1952 - 26 th September 1955
	Gen Sir Gerald Templer	29 th September 1955 - 1958
Chief of the Air Staff (CAS)	ACM Sir William Dickson	1 st January 1953 - 1 st January 1956
Vice Chief of the Air Staff (VCAS)	AM Sir Ronald Ivelaw-Chapman	9 th November 1953 - 9 th November 1953
	AM Sir Thomas Pike	9 th November 1953 - 4 th July 1956
Air Member for Supply and Organisation	ACM Sir John Whitworth-Jones	1 st September 1952 - 1 st May 1954
Air Member for Personnel	AM Sir Francis Fogarty	1 st November 1952 - 1 st January 1957
C-in-C HQ Middle East Air Force (MEAF)	AM Sir Arthur Sanders	19 th May 1952 - 25 th October 1953
	AM Sir Claude Pelly	25 th October 1953 - 10 th September 1956
Senior Air Staff Officer (SASO) MEAF	AVM JNT Stephenson	15 th June 1954 - 1 st May 1957
AOC British Forces Aden	AVM Sidney Bufton	12 th October 1953 - 15 th October 1955
Asst Chief of the Air Staff (Operations)	AVM Sir Laurence Sinclair	4 th November 1953 - 17 th September 1955
S.R.A.F.O. in Kenya	Gp Capt Eayres (CO Eastleigh)	20 th June 1953 - 27 th May 1954
	Air Commodore W K Beisiegel	27 th May 1954 - 28 th September 1955

Figure Two: List of key personalities involved in the use of airpower in Kenya.

the Kikuyu as it stated offensive air operations would only occur in those areas prohibited to civilians, where only the Mau Mau were known to operate.²⁷ Moreover, the Chief of the Air Staff (CAS) (figure four shows the key personalities involved in the use of airpower in this conflict) also directed the C-in-C Middle East Air Force (MEAF) to ensure the Senior RAF Officer (SRAFO) in Kenya was fully aware of the need to avoid civilian casualties,²⁸ thereby refuting claims that Erskine and others in authority had a policy of indiscriminately bombing civilians.²⁹

The RAF not only instigated a policy of avoiding civilian casualties; they rigorously enforced it. Air Operations

Orders (AirOpsO) highlighted forest boundaries and the edges of the prohibited areas to ensure no bombing occurred outside of them - some specifically stated every effort should be made to avoid unnecessary damage.³⁰ Proposals to change aerial bombing practices were also rigorously scrutinised. In April 1954, it was proposed extending RAF operations into the reserves because it was clear the Mau Mau had realised the restrictions placed on aerial operations and were openly walking around in large gangs firing at passing aircraft, safe in the knowledge they could not be attacked.³¹ The VCAS first scrutinised the request and stated such targets

should only be prosecuted if gangs could be clearly identified, if no danger of killing innocent civilians existed and in all cases, the principal of minimum force was to be used to achieve the effect desired. Therefore, only the Harvard's 20lb bombs were authorised and its machine gun was not. The CAS supported the proposal, but only if the Army Commander who would originate the request was in close contact with the target to ensure no danger to civilians existed. Lyttelton then sought Churchill's authorisation noting that although permitting bombing outside of the prohibited areas would undoubtedly be attacked by some in Parliament, it was known from interrogating such key Mau Mau leaders like General China that many insurgents knew the air restrictions and deliberately took refuge in the reserves to avoid being bombed. Following discussion by Churchill and the Cabinet on 26th May 1954 (with CAS present), permission was granted for such air strikes to occur.³² Lyttelton then tasked Erskine to introduce procedures to ensure only reliable pilots were chosen for these tasks – now to be termed 'Operation MUSHROOM'.³³

The RAF's determination to use airpower proportionally was also seen by how it reacted following the use of the Harvard's machine guns and bombs on a large gang near Mount Logonot on 11th November 1954.³⁴ The CAS asked Erskine to explain why machine guns were used when all orders specifically forbade their use outside prohibited areas. After investigation it was revealed the Chief of Staff (COS) in the Joint Operations Centre (JOC)

who had authorised their use had acted appropriately, as the area was isolated and the risk to civilians low. However, the CAS directed that in future, before any RAF action was undertaken which departed from existing policy, the SRAFO's authority was to be obtained.³⁵

In January 1955, Churchill's approval was sought to continue Operation MUSHROOM activity. The matter would be kept under constant review and such operations would: '... not be permitted to continue for longer than they are really necessary.'³⁶ This shows the most senior members of the RAF and the Government understood that the contest for the support of the population in counterinsurgencies is based on moulding the population's perceptions;³⁷ clearly something which civilian casualties would have a detrimental effect on. With evidence of a proposal to use 4000lb bombs against the Mau Mau also being declined for 'political considerations',³⁸ it is clear RAF Commanders appeared to have had a better understanding of weapons effect and the type of war they were engaged in than their Army counterparts - a reference to Clausewitz' warning that: '... the first, the supreme, the most far-reaching act of judgement that the statesman and commander have to make is to establish ... the kind of war on which they are embarking; neither mistaking it for, nor trying to turn it into, something that is alien to its nature.'³⁹ A number of atrocities such as torture, rapes and illegal killings were committed by British troops, including incidents where a detachment of the 7th Kings African

Rifles robbed, beat and then killed four Kikuyu labourers after they ran when challenged.⁴⁰ These created a deep resentment amongst the Kikuyu 'undecided' population and rightly frustrated Erskine who made considerable attempts to rectify the situation; not long after his arrival he ordered his Officers to '... stamp on at once any conduct which he would be ashamed to see used against his own people.'⁴¹ However, despite this, some atrocities continued to be committed by his soldiers.

The avoidance of civilian casualties from air action is vital in ensuring the hearts and minds of the civilian population are won in counterinsurgencies. In Afghanistan, civilian casualties from airstrikes trebled from 2006 to 2007 and, although the Human Rights Watch stated most of these occurred during rapid-response airstrikes when troops were in contact,⁴² incidents such as the Kunduz airstrike in September 2009 (a planned strike with no 'troops in contact' which was requested by a German Commander against Taliban insurgents who had stolen two fuel trucks and led to 142 civilians killed), demonstrate how quickly air action can turn the population against the authorities. Not only did this lead to Germany's highest ranking soldier resigning over allegations that the German Defence Ministry concealed information about civilian deaths in the incident's aftermath, but it also caused outrage in the international community.⁴³ Such events have the ability to undermine the whole campaign in conflicts like Afghanistan; a fact acknowledged by General McChrystal when he stated '... the objective is the will of

the people ... protecting the people means shielding them from all threats'⁴⁴ adding that:

*'A focus by ISAF intelligence on kinetic targeting...[has] hindered ISAF's comprehension of the critical aspects of Afghan society ... Civilian casualties and collateral damage to homes and property resulting from an over-reliance on firepower ... have severely damaged ISAF's legitimacy in the eyes of the Afghan people.'*⁴⁵

Fielded forces

The Mau Mau gangs in the forests of Mount Kenya and the Aberdares comprised the 'fielded forces' ring in the model and were predominantly targeted by kinetic action (pre-planned bombings and close air support) and PSYOPS; consisting of shows of force (SOF), leaflet drops and sky broadcasts aimed at persuading the fighters to surrender. PSYOPS were regarded by the Colonial Office as one of the main ways of solving the emergency and the RAF played a key role in this by undertaking sky-shouting duties and by dropping propaganda leaflets designed to persuade the Mau Mau to surrender. The Lincolns dropped over 100,000 leaflets during Operation HAMMER in January 1955 and over five million in June 1955. Likewise, many pre-planned missions were coordinated with the Auster sky-shouting aircraft from the end of February 1954 and AirOpsO show this was usually undertaken for three days following a mission.⁴⁶

The Lincolns also regularly distributed leaflets during their bombing sorties and, as the conflict progressed, the importance of PSYOPS increased; Pembroke aircraft

were modified to undertake sky-shouting duties and to assist the two Austers and, in June 1955, General Lathbury urgently requested two more aircraft for this role, judging them to be more useful at this time than the Lincolns.⁴⁷ Although SRAFO requested the transfer of two Dakotas from Malaya, the Air Ministry rejected this as these were considered: '... essential to operations ... having a large impact on facilitating surrenders.'⁴⁸ By July 1955 over 800 Mau Mau had surrendered⁴⁹ and, although many did so because of hunger and a realisation victory could not be achieved, it is clear the leaflet drops and sky-broadcasts undoubtedly contributed.

The last part of the PSYOPS campaign was SOF. Undertaken from June 1953 onwards, Churchill stressed the importance of making a display of airpower over the heads of the Mau Mau, stating: 'The more they saw an aircraft overhead, the more they would feel that all their movements were under observation.'⁵⁰ It was clear SOF certainly influenced the insurgents; reports from prisoners revealed that when two Vampires flew over them, their speed terrified them so much they decided to surrender immediately.⁵¹

Notwithstanding this, it was still necessary to kinetically target those who could not be reconciled. This was firstly conducted by the Harvards in June 1953 (although a rather rudimentary form of offensive action had been undertaken by the KPRAW pilots before this consisting of dropping home-made bombs and grenades on gangs),⁵² however, by October it was clear an aircraft

capable of delivering more firepower was required. Consequently, the CAS offered the Lincolns to C-in-C MEAF based on the glowing reports General Templer gave on their use in Malaya.⁵³ The CAS noted:

*'... the main gangs, which are your principal tactical objective, may, like those in Malaya, be getting accustomed to the 20lb bomb and be getting trained to avoid casualties from its small blast effect in the forest. It is possible you may need a heavier bomb for occasional use so as to maintain the morale effect of air action which otherwise may decrease ... a reinforcement which may make all the difference in turning the scale in your operations and by showing the tribes the power of the Government.'*⁵⁴

Churchill gave permission for the deployment on 5th November and eight Lincolns arrived six days later with 24 air and 37 ground crew from 49 Squadron, Wittering. Based at Eastleigh and carrying a standard bomb load for each mission of nine 500lbs and five 1000lb bombs, they began operations on 18th November dropping in sticks between 300 and 3000 yards. They were to operate for an undefined period in order to test the psychological effect of heavy bombing on the Mau Mau.⁵⁵

Although some have claimed the Lincoln's contribution to the conflict was negligible,⁵⁶ the archival evidence reveals almost 900 insurgents were killed or wounded as a direct result of air attacks between November 1953 and June 1954 alone.⁵⁷ Moreover, airpower's objectives of breaking the insurgents' morale, spreading disaffection, driving insurgents out of the forests and breaking up the gangs⁵⁸ were all achieved by: '... not only killing terrorists, but by imposing

on them such intolerable conditions that they will elect to come out of the prohibited areas.⁵⁹ Reports compiled from prisoner interrogations revealed considerable success was achieved in inducing psychological terror on the insurgents. For example, a Mau Mau gang leader called Gitonga Karame surrendered in September 1954 after twenty of his gang were killed in an air strike.⁶⁰

In a report for Churchill, Erskine argued how important airpower was to operations in Kenya; stating the threat of attack had caused the gangs to disband, had lowered their morale and a pronounced move of them from the forests to the reserves was witnessed after the Lincolns arrived. Moreover, air action in general also boosted the morale of friendly forces because it took the fight to the Mau Mau in the deepest areas of the forests where Erskine's ground forces were unable to operate in strength. In some places it was virtually impossible for ground troops to surround and destroy all gang hideouts and the Lincolns proved ideal for attacking them – thereby supporting Pape's theory that airpower is best used as a substitute for ground power when the latter is unable to reach the insurgent.⁶¹ Additionally, given that in the early stages, the Army was pre-occupied with combating the unrest in the reserves and soldiers could simply not be spared to conduct operations in the forests on a large scale, the Lincolns and the Harvards represented the only way to attack the insurgents and it is clear that without their contribution, the Mau Mau would have been able to escape into the deepest areas of the forests and

live in safety. Erskine said he was: '... convinced that the air effort prepared the way for ground action in the forest – without it, the ground troops would have had a tougher and more difficult job to do.'⁶² The Lincolns remained in Kenya until 28th July 1955 and during their deployment, they dropped nearly six million bombs and conducted over 900 sorties.⁶³

The Harvards proved the most adept at close air support; able to operate in all weathers; dropping bombs within 300 yards of friendly forces. They were however constrained by the KPRAW Piper-Pacers who had to first mark the target with smoke before it could be attacked. This lost the element of surprise.⁶⁴ Notwithstanding this, one incident on 6th August 1953 highlighted the need for quick communications for air operations to be effective in such fluid environments. Over 1000 Mau Mau were seen by an Army patrol and although the information was passed to Fort Hall Army HQ at 1600, a request for air support was not received by the RAF signals unit at Mweiga until 1725; during which time, the cloud base had lowered so much that bombing could not be undertaken.⁶⁵ Likewise, on another occasion it was reported that the Lincolns dropped their bombs over 4500 yards from the target⁶⁶ and on another, there was a 30 minute delay between the Piper-Pacers dropping their target markers on a gang and the Lincolns arriving; thereby allowing the gang to disperse.⁶⁷ After these initial problems, close air support procedures improved in Kenya and led to Erskine thanking the RAF for its tremendous efforts in helping to capture General China

and a large number of his supporters in April 1954, adding that he was very impressed by the excellent co-operation he had witnessed between the RAF and other security forces.⁶⁸

In the early stages of the conflict the ISTAR functions of *find, fix, strike* and *exploit*; now viewed as so critical to the success of air operations, were not all satisfactorily undertaken. Whilst the RAF was able to comprehensively 'strike' targets, it struggled to undertake the 'find' and 'fix' functions because it lacked a timely and accurate source of intelligence. Air operations were planned almost exclusively on information received from Army patrols or prisoner interrogation reports highlighting where gangs were believed to be operating in the forests. This often took eight weeks to arrive and was therefore usually inaccurate as the gang had invariably moved from the area by the time a bombing mission occurred. Moreover, due to a lack of capability, no high quality photographs of target areas existed from which air operations could be planned.⁶⁹

To address this, C-in-C MEAF ordered the Lincolns to be modified for PR duties in March 1954 until a more permanent solution was found. They undertook 42 successful PR sorties providing valuable information for planning air strikes before two Meteor PR 10s from 13 Squadron were permanently detached to Kenya in August 1954 (after demonstrating their superior capabilities on a three-week detachment in April).⁷⁰ Operating from Eastleigh, the Meteors undertook 234 sorties before leaving Kenya in July 1955. Air staffs

acknowledged that they '... proved invaluable for planning large scale bombing operations and for passing intelligence to ground forces – without them we would have been groping in the dark.'⁷¹

Airpower in supporting roles

Discussing the utility of airpower in 1944, Slessor wrote: 'The moral is that we should continue to exploit the peculiar qualities of the air as the weapon of pursuit, to give the enemy no respite or opportunity ...'⁷² Whilst his view still holds, what is clear is that targeting the insurgent will only achieve so much in counterinsurgencies. To be completely successful, air must also be used to support friendly forces and also aim to deprive the insurgents of those essentials they depend on for survival - thereby making it impossible for them to fight on.⁷³ This is why an insurgent's supplies, bases and the local population's support are sometimes more important targets than the insurgents themselves. After all, there is, only so much utility kinetic airpower can provide. As Gray notes, if airpower is used to: '... combat a highly irregular and ... part-time enemy who hides amongst quite densely packed civilians ... [it] ... cannot be at the leading edge of effectiveness.'⁷⁴ Moreover, although today the aspiration is for surgical strikes: '... even a surgeon's knife lets blood and creates scars.'⁷⁵ In Kenya, strict policies of avoiding civilian casualties, in conjunction with undertaking influence operations such as leaflet drops or just providing an aerial presence to convince the indigenous population the insurgents were not worth supporting, helped

to separate the population from the Mau Mau's influence.

The softer elements of airpower are arguably more important in contemporary operations and the role Air mobility plays in directly influencing the population's hearts and minds should not be underestimated. Such influence operations as transporting thousands of Iraqis from Basrah to Mecca for the Hajj pilgrimage provide contemporary examples. Equally, the ability to move friendly forces rapidly into an area can deliver an immediate strategic effect. As JFC Fuller said: '... a handful of men at a certain spot at a certain hour is frequently a far more powerful instrument of war than ten times the number on the same spot twenty-four hours later.'⁷⁶ When one Battalion of the Lancashire Fusiliers was flown to Eastleigh the day after the emergency was declared, an immediate security presence on the streets of Nairobi was created and with it, a clear strategic effect. Five months later, RAF Transport Command organised the move of 1254 men and 54 tons of equipment from Lyneham and Stanstead to Nairobi in just nine days. Codenamed Operation NICOTINE, this large-scale movement between 30th March and 7th April 1953 used a combination of RAF Hastings along with chartered Tudor and York aircraft and provided a significant strategic impact.⁷⁷

Air also supplied troops in the forests (planning for the 18480lbs of supplies dropped per week in the Aberdares during Operation HAMMER began five months beforehand and the Piper-Pacers, capable of carrying

enough rations to supply 25 men at a time, were often used to resupply two patrols on a single sortie. A large number of supply drops were also made by Valettas; capable of dropping 5900lbs by parachute on one sortie and even the Lincolns dropped 320 packages during December 1953 to Soldiers around Mount Kenya from altitudes as high as 14000ft.⁷⁸ As Erskine said: 'The Air effort is of great importance ... Supply dropping and recce by the KPR Air Wing is essential and is carried out with great efficiency.'⁷⁹

Media also plays a crucial role in the use of airpower in counterinsurgencies and the military needs to ensure that it works as closely as it can with it, so that the overall mission is not undermined by the mis-reporting of events. When the Lincolns deployed to Kenya, the CAS anticipated a media backlash and was very keen to ensure the deployment was not referred to as a bombing 'experiment' which the Mau Mau were being subjected to.⁸⁰ Despite these efforts, the press claimed the Lincolns were undertaking 'trials of pattern bombing' on the Kikuyu.⁸¹ Lyttelton had to refute similar accusations in Parliament and Erskine wrote to the CAS apologising for how the situation was handled;⁸² despite Erskine's comments it appears an Army Officer in Nairobi used the phrase "pattern bombing" rather too frequently when briefing the press.⁸³ Another article claiming that air attacks on the Mau Mau were 'wasteful,'⁸⁴ also caused a furore and resulted in Churchill asking for a report from Erskine on the efficacy of air action in Kenya.⁸⁵ The Media has the potential to influence the will

of the home population to support the conflict and is therefore key in upsetting Clausewitz' remarkable trinity of the balance between the People, the Government and the Military. Maintaining: '... a balance between these three tendencies, like an object suspended between three magnets'⁸⁶ is critical to ensuring success and a careful management of the media will certainly help achieve this. Indeed, Clodfelter noted that: 'Airmen who fail to appreciate that these relationships exist – and *how* they bond together for a specific enemy or ally, as well as for his or her own nation – stand on very shaky ground ...'⁸⁷

For air to be effective in counterinsurgencies, senior Commanders must realise the efficacy it can provide from the outset. In the early stages in Kenya, little thought was given to how air could be used and there was a lack of senior RAF representation in the Colony. The Military Command consisted almost entirely of Army Officers who possibly believed the insurgency could be quickly resolved by ground forces alone and they perhaps thought there was no need for an RAF deployment in what was primarily a land-based operation. Despite the CAS offering the use of four Harvard aircraft which had become available following the disbandment of the Rhodesian Air Training Scheme on 13th February 1953, following advice from General Hinde,⁸⁸ this offer was declined.⁸⁹ Indeed, it wasn't until the Chief of the Imperial General Staff (CIGS) visited Kenya in late two weeks later and viewed the deteriorating security situation for himself, that it was finally decided to

use RAF aircraft in Kenya along with one Infantry Brigade Headquarters and two Infantry Battalions; a move which would, he argued, restore security quickly.⁹⁰

Churchill and the Cabinet endorsed this on 10th March and within a week, RAF Transport Command was arranging the movement of the Harvards and all associated munitions and support equipment to Kenya. By the end of the month, formal approval was given to establish No. 1340 Flight to operate the Harvards, which all arrived on the 27th.⁹¹ However, given the degree of importance that was attached to ensuring these aircraft were hurriedly despatched to Kenya and that Churchill and the Cabinet were keen to see airpower used in the conflict, the archival evidence remarkably reveals they were not used during their first two months in the Colony because Hinde: '... was not convinced that offensive air operations could be effective in the heavily wooded area of operations'.⁹² This discovery demonstrates that even the best intentions of the Cabinet can be thwarted by the decision of one local Commander.

The lack of senior RAF representation undoubtedly contributed. No. 1340 Flight was commanded by a Squadron Leader, who may well have struggled to voice his opinion. Equally, the SRAFO in Kenya; Group Captain Eayres, the Station Commander of RAF Eastleigh, was not involved in advising Hinde and only became Erskine's advisor on 30th June 1953 on CAS' insistence.⁹³ As the operation progressed, the CAS realised an Officer of Air rank was needed in Kenya to advise Erskine

because: 'In operations of this kind, one error of judgement in the use of the RAF can lead to political embarrassment,'⁹⁴ adding that an Air Commodore would be better placed to improve the control and coordination of air operations with ground forces.⁹⁵ Notwithstanding this, it still took until May 1954 for Air Commodore Beisiegel to arrive as the new SRAFO. He stayed until September 1955 and made a considerable impact; improving the coordination process between target-marking by the Piper-Pacers and the bombing of the Mau Mau by the Harvards and Lincolns. He also instigated a bombing strategy; where specific areas were focussed on by all air assets one stage at a time, as opposed to the previously sub-optimal policy of bombing all areas simultaneously. As an accolade, the Air Member for Personnel noted that: 'The presence of an Air Commodore in Kenya has justified itself in many ways and the present S.R.A.F.O. has done admirable work in establishing a better relationship with the Kenyan Government and in planning and controlling air operations.'⁹⁶

However, whilst an Air Commodore in Kenya was certainly beneficial, unfortunately, the establishment of an efficient, joint and coordinated system in which air operations were a fundamental part took far too long to establish and this led to inefficiencies in the early stages. It was recognised in 1953 for example that no unity of command existed over the KPRAW and little coordination occurred between the Army, the Police and the RAF.⁹⁷ To resolve this, six RAF pilots were sent to augment the KPRAW in October as considerable

issues had been encountered with the organisation failing to provide aircraft when asked – an obstinate attitude to any tasking from the RAF also appeared all-pervasive. Indeed, the C-in-C MEAF called the KPRAW '... something of an embarrassment ... [where] ... although the pilots are very skilful, they are under no discernible level of discipline and they tend to come and go as they please.'⁹⁸ On the insistence of CAS, this organisation was brought under RAF command in March 1954 and the situation improved dramatically.

Conclusion

Although it occurred almost sixty years ago, the use of airpower in the Mau Mau conflict does reveal some lessons for its use in counterinsurgencies today. Through the careful use of kinetic airpower, civilian casualties were avoided in Kenya and the RAF strived to ensure it operated within the rule of law. However, air's kinetic role must be used sparingly in counterinsurgencies if the ramifications of its failures, fuelled by media frenzies, are not to undermine the entire support for the conflict itself. As Clodfelter notes: 'In the amorphous conflicts ... in the future, firepower, no matter how precise, is unlikely to yield the success necessary to secure the war aims sought – and in some cases it may well produce the antithesis of the desired effects.'⁹⁹ Not forgetting the fundamental goal in counterinsurgencies is to win the population's hearts and minds, because it is: '... in men's minds that wars of subversion have to be fought and decided,'¹⁰⁰ success will mainly be achieved through the 'softer' airpower tasks. Air mobility

will play a key role in supporting friendly forces, thereby improving morale, providing a strategic effect and positively influencing the local population through the delivery of humanitarian aid or by transporting people to religious events. Equally, ISTAR will continue to play an increasing role by both protecting friendly forces from insurgent attacks and by increasing the situational awareness of commanders. Excellent results were also obtained in Kenya by using air to influence the population through leaflet drops, sky-shouting and SOF. These, along with a policy of destroying the insurgents' food supplies and adopting an approach where the threat of bombing increased the psychological pressure, paved the way for military victory and ultimately helped to drive the insurgents out of the forests.

Crucially however, Commanders still have to realise the efficacy airpower can provide to such conflicts from the outset: '... air and space power isn't an optional luxury that can be added to an erstwhile military operation on the ground or at sea; rather, it provides the essential foundation for any sort of military endeavour.'¹⁰¹ Kenya shows that air operations must be brought into the conflict from the start and be properly coordinated in a joint manner to be truly effective. Perhaps if the RAF had been deployed in greater numbers and been properly integrated with all other security forces earlier, then what the Government described as its chief weapon, could well have delivered success much sooner than 1955.

Notes

¹ The National Archives [hereafter TNA] CAB:129/55: Memorandum,

Baring to Lyttelton, 13/10/1952.

² C Elkins, *Britain's Gulag: The Brutal end of Empire* (London: Pimlico, 2005).

³ D Branch, *Defeating Mau Mau, creating Kenya: counterinsurgencies, civil war and decolonization*, (Cambridge: University Press, 2009), 1.

⁴ A Mumford & C Kennedy - Pipe, "Unnecessary or unsung? The Strategic Role of Air Power in Britain's Colonial Counterinsurgencies," in *Air Power, Insurgency and the "War on Terror."* ed. J Hayward, (Cranwell: RAF Centre for Air Power studies, 2009), 73.

⁵ TNA AIR 14/4496: Report on 49 Squadron's Mau Mau operations, 20/1/1954.

⁶ Air:20/9530: Report on RAF Operations in Kenya 1953-1955, 3-4.

⁷ Air:20/9530: Report on RAF operations in Kenya, 4-7.

⁸ A Waters, "The Cost of Air Support in Counter-Insurgency Operations: The case of the Mau Mau in Kenya," *Military Affairs*, (1973): 99.

⁹ Areas each approximately 800 miles² declared 'prohibited' to all civilians in December 1952. The Mau Mau consisted mainly of Kikuyu natives and they operated almost exclusively in these 2 areas although they did also venture into areas known as the reserves which were where the peaceful native Kenyans resided.

¹⁰ TNA AIR 2/12668: Report on the role of Air Power in Mau Mau Operations 14/8/1954, 5.

¹¹ The GOC-in-C East Africa Command 7/6/1953-2/5/1955, commanding all forces in Kenya including the RAF.

¹² TNA AIR 14/4073: Weekly intelligence report, 27/4/1955.

¹³ Carl Von Clausewitz, *On War* (London: David Campbell Publishers, 1993), 580.

¹⁴ Whilst the Mau Mau lacked

the capability to shoot down RAF aircraft, it did not stop them trying [see 'population' section]. At least two Lincolns were lost during the conflict - crashing in poor visibility on night bombing sorties and killing all crew members; one crashed in the Aberdares on 29th March 1954 and another near Mount Kinangop on 7th April 1954. Examination of the wreckage revealed enemy action was not responsible. See TNA AIR 20/9516.

¹⁵ The Mau Mau's supposed political leader, Jomo Kenyatta, and 180 other political figures were arrested in Operation JOCK SCOTT on 21/10/1952. See Elkins, *Britain's Gulag*, 35-36.

¹⁶ Over 1400 Army personnel including four Companies each of the Royal Northumberland Fusiliers, Royal Inniskillings, the Black Watch, 600 police and no RAF participated in Op ANVIL. See: TNA CO:822/796: Report on Operation ANVIL, 5/3/1954.

¹⁷ The functions of '*find, fix, strike and exploit*' are given in AP3000, fourth edition, 46.

¹⁸ Examples included the pre-planned Lincoln bombings on an area where the gang leaders Kahau Karichu and Samuel Mwangi were thought to be present and the strike of 13/5/1955 when a gang of 300 Mau Mau under 'Generals' Wariungi and Kiarri Manuthia was attacked. See TNA WO 276/458: (AirOpsO 11/54, para 4 and 20/55, paras 2-3. respectively).

¹⁹ TNA WO 276/458: AirOpsO 11/54.

²⁰ Warden III, J. *The Air Campaign; planning for combat*, (New York: to Excel, 1998), 80.

²¹ TNA AIR 14/4073: RAF interrogation report of 'General' Mugo, leader of the Kibira Ngatu

gang, captured 11/12/1954 in Nyeri.

²² British Army, *Army Field Manual Volume 1, Part 10: Countering Insurgency* (Land Warfare Centre: 2009), 1-2.

²³ So called in this analysis because they were unsure as to where their allegiances lay. JDP 3-40 defines this element of the population as 'neutrals' and notes that their passive acquiescence plays a critical role in a Government's success in counterinsurgencies. See MoD, *JDP 3-40: Security and Stabilisation: The Military Contribution*. (Shrivenham: DCDC, 2009): 5-3.

²⁴ TNA AIR 20/9530: Report on the use of air bombing as a morale weapon, 2.

²⁵ H Bennett, "The Other Side of the Coin: Minimum and Exemplary Force in British Army Counterinsurgency in Kenya," *Small Wars & Insurgencies*, Vol. 18, No. 4 (2007): 640-657.

²⁶ TNA WO 276/233: Royal Air Force bombing raids: Emergency Directive No.6, 3/5/1953, 4.

²⁷ TNA AIR 20/9041: Note on RAF support to Mau Mau Operations by Air Commodore Graham. 20/6/1953, 4.

²⁸ TNA AIR 20/9041: Signal CAS to C-in-C MEAF, 30/6/1953.

²⁹ R Edgerton, *Mau Mau: An African Crucible* (London: IB Tauris, 1990), 86.

³⁰ TNA WO 276/458.

³¹ TNA AIR 20/9041: Signal Crawford to Lyttelton, 24/4/1954.

³² TNA CAB 128/27: Minutes of Cabinet meeting of 26/5/1954.

³³ TNA AIR 20/9041: Letter Lyttelton to Erskine, 28/5/1954.

³⁴ Approximately 20 miles outside of the Aberdares prohibited area.

³⁵ TNA AIR 8/1886: Letter SRAFO to OC Eastleigh and Tactical Air Commander in the JOC, 26/11/1954.

³⁶ TNA AIR 8/1886: Letter seeking Churchill's permission to continue Op MUSHROOM activity 24/1/1955.

- ³⁷ British Army, *Countering Insurgency*, 1-7.
- ³⁸ TNA AIR 8/1886: Signal CAS to C-in-C MEAF 12/10/54.
- ³⁹ Clausewitz, *On War*, 100.
- ⁴⁰ Bennett, *The other side of the Coin*, 649.
- ⁴¹ Bennett, "The British Army and Controlling Barbarization during the Kenya Emergency," in *Warrior's dishonour: barbarity, morality and torture in modern warfare*, ed. G. Kassimeris (Aldershot: Ashgate, 2006), 61.
- ⁴² 116 Afghan civilians were killed in 2006 by NATO airstrikes. In 2007 this increased to 321; more than the number killed by ground fire that year. See "*Troops in Contact: Airstrikes and Civilian Deaths in Afghanistan*," Human Rights Watch (USA: 2008). Available at: <http://www.sipri.org/blogs/Afghanistan/airstrikes-and-civilian-casualties-in-afghanistan> (accessed May 4, 2010).
- ⁴³ <http://www.spiegel.de/international/germany/0,1518,663582,00.html> (accessed April 4, 2010).
- ⁴⁴ McChrystal, S. *Commander's Initial Assessment*, (August 2009): 1-3. Available at http://media.washingtonpost.com/wp-srv/politics/documents/Assessment_Redacted_092109.pdf?hpid=topnews (accessed May 10, 2010).
- ⁴⁵ *Ibid.*, 2-10.
- ⁴⁶ TNA AIR 14/4073: Intelligence reports 1954-55.
- ⁴⁷ TNA AIR 8/1886: Signal Lathbury to C-in-C MEAF, 3/6/1955.
- ⁴⁸ TNA AIR 8/1886: Signal Director of Operations to Lathbury, 7/6/1955.
- ⁴⁹ TNA AIR 20/9517: Signal Eastleigh to HQBF Aden, 21/7/55.
- ⁵⁰ TNA AIR 2/12268: Extract from minutes of the Defence Committee(53) 4th meeting, 7/3/1953.
- ⁵¹ TNA AIR 20/9041: Brief for the War Council on the effects of bombing the Mau Mau, 5/7/1954, 2.
- ⁵² TNA AIR 20/9530: Report on RAF operations in Kenya 1953-1955, 4.
- ⁵³ The Lincolns were requested by Templer on 9/6/1953 and, under Operation BOLD, eight were sent to Tengah and began operations with 83 Sqn at a planned rate of effort of 35 hours per month. They remained in Malaya until April 1954. See TNA AIR 20/9271: Bombers Malaya: Air support for operations by Lincoln aircraft.
- ⁵⁴ TNA AIR 20/9041: Signal CAS to C-in-C MEAF, 26/10/53.
- ⁵⁵ TNA AIR 14/4496: Report on 49 Sqn in Kenya.
- ⁵⁶ Waters, *The Cost of Air Support*, 98.
- ⁵⁷ TNA AIR 20/9041: Brief for the War Council on the effects of Mau Mau bombing, 5/7/1954, 2.
- ⁵⁸ *Ibid.*
- ⁵⁹ TNA WO 276/233: RAF bombing raids: Report on the use and value of heavy bombing, 1.
- ⁶⁰ TNA AIR 14/4073: Extracts from interrogations of Mau Mau prisoners about the effects of bombing, 15/11/1954.
- ⁶¹ Pape, *Bombing to Win*, 79.
- ⁶² G Erskine, *The Mau Mau Rebellion*, A lecture by General Erskine to the Camberley Staff College (1955).
- ⁶³ TNA AIR 20/9517: Operations summary reports.
- ⁶⁴ TNA AIR 2/12668: Future air staff policy: Report on Air matters, 14/8/1954.
- ⁶⁵ TNA AIR 20/9530: Report on Delay of clearance of targets by Army formations.
- ⁶⁶ TNA AIR 23/8615: Mau Mau operations 1953-1954. Directive from SRAFO highlighting Lincolns missing targets, 23/12/1953.
- ⁶⁷ TNA AIR 23/8615: Report on the effectiveness of RAF bombing

- during Operation BLAST from OC C Company, Kenya Regiment, 25/3/1954; 1.
- ⁶⁸ TNA AIR 23/8615: Letter to all security forces from Erskine, 16/4/1954.
- ⁶⁹ TNA AIR 23/8617: Air Operations Policy: Report from Wg Cdr Newman to DirOfOps(3) entitled 'Air Force operations in support of cold or limited wars', 17/5/1954.
- ⁷⁰ TNA AIR 20/9530: Report on RAF Operations 1953-1955, 6.
- ⁷¹ TNA AIR 20/9517: Report on Photo Reconnaissance, 2.
- ⁷² TNA AIR 75/69: Slessor's report on the effect of Air Power in a Land Offensive to General Arnold, Commander US Army Air Forces, 18/6/1944, 6.
- ⁷³ J Paget, *Counter-insurgency campaigning* (London: Faber and Faber, 1967), 167-168.
- ⁷⁴ C Gray, "Understanding Airpower: Bonfire of Fallacies," *Strategic Studies Quarterly*, (Winter 2008): 60.
- ⁷⁵ P Colley, "Soldiers are from Mars and Airmen from Venus: Does airpower do what it says on the tin?" *Air Power Review*, Vol.11, No.2 (Summer 2008): 111.
- ⁷⁶ JFC Fuller, cited in *AP3002: Air and Space Warfare, 2nd Edition*, (Waddington: Air Warfare Centre, 2010), 8-1.
- ⁷⁷ TNA AIR 2/12268: Op NICOTINE: Airlift of reinforcements to Kenya: Letter DofOps(3) to SofS for Air, 10/4/1953.
- ⁷⁸ TNA AIR 14/4496: Report on 49 Squadron's Mau Mau Operations in Kenya, 1/1954.
- ⁷⁹ TNA WO 216/861: Report by Erskine to Lyttelton, 3/10/1953, 4.
- ⁸⁰ TNA AIR 20/9041: Signal CAS to SRAFO 27/11/53.
- ⁸¹ "Kenya Pattern Bombing," *The Daily Telegraph*, November 19 (1953): 9.
- ⁸² TNA AIR 20/9041: Letter Erskine to CAS 23/11/1953.
- ⁸³ TNA AIR 20/9041: Signal Chief Information Officer, Eastleigh to C-in-C MEAF, 25/11/1953.
- ⁸⁴ H Ziman, "Wasteful air attacks on Mau Mau," *Daily Telegraph*, December 21 (1953): 6.
- ⁸⁵ TNA AIR 20/9041: Minutes of Chiefs of Staff(53)144th Committee meeting, 22/12/1953.
- ⁸⁶ Clausewitz, *On War*, 101.
- ⁸⁷ M Clodfelter, "Back from the Future: The Impact of change on Airpower in the Decades Ahead," *Strategic Studies Quarterly* (Fall 2009): 106.
- ⁸⁸ All military operations in Kenya were commanded by Major-General Hinde at this time.
- ⁸⁹ TNA AIR 20/9530: Report on RAF operations in Kenya 1953-1955, 4-5.
- ⁹⁰ TNA AIR 2/12268: Op NICOTINE: Airlift of reinforcements to Kenya: Minutes of the Defence Committee(53) 4th meeting 6/3/1953.
- ⁹¹ TNA AIR 20/9041: Telegram ACAS(Ops) to SASO MEAF, 28/3/1953.
- ⁹² TNA AIR 20/9041: Note from DirOfOps(3) to CAS, 20/6/1953, 2.
- ⁹³ TNA AIR 20/9041: Signal CAS to C-in-C MEAF, 30/6/1953.
- ⁹⁴ TNA AIR 20/9041: Letter CAS to Lyttelton, 28/4/1954.
- ⁹⁵ Ibid.
- ⁹⁶ TNA AIR 8/1886: Letter AMP to CAS, 27/6/1955.
- ⁹⁷ TNA AIR 20/9041: Note from DirOfOps(3) to CAS, 20/6/1953.
- ⁹⁸ TNA AIR 20/9041: Report from C-in-C MEAF to CAS 8/1/54
- ⁹⁹ Clodfelter, *Back from the Future*, 111.
- ¹⁰⁰ F Kitson, *Low Intensity Operations: Subversion, Insurgency and Peacekeeping* (London: Faber and Faber, 1971), 31.
- ¹⁰¹ Dalton, *Dominant Airpower*.

Networking not ‘the Network’: the Key to Information Age Warfare

By Wing Commander (Ret'd) Stew Edmondson

Following the lead of the United States, the UK Armed Forces are harnessing information technologies through a concept called Network Enabled Capability (NEC). There is no empirical proof that the quality of military judgement has improved with the spread of networked computing and information systems. Nevertheless, we are encouraged to trust that decision making will somehow be ‘better’ in the NEC future. At best this paper will argue that investments in network infrastructure will provide improved Network Enabled *Capacity*. The provision of improved interconnectedness and sharing of information may provide the potential to make improvements in the cognitive domain. However, the main thesis presented in the paper is that the nirvana of making ‘better’ decisions cannot be extrapolated directly from improvements made in the network infrastructure and information levels. It will be argued that this is a fallacy based on the adoption of a technological rather than a constructivist view of information. Moreover, that it fails to take proper account of the actual cognitive processes associated with decision making. It is posited that exploiting social networks could provide the key to improving cognitive performance and to making ‘better’ decisions in the future; thus emphasising the importance of networking, rather than ‘the network’ in Information Age warfare.

“War is the realm of uncertainty; three quarters of the factors on which action in war is based are wrapped in a fog of greater or lesser uncertainty”¹

Introduction

The period covering the late twentieth century and early years of the twenty-first century is now commonly accepted as the ‘Information Age’.² During this period we have been witnessing the rapid growth of post-industrial economies and increasing globalisation both driven by developments in information and communications technologies. Increasingly ubiquitous communications and pervasive computing have empowered post-modern societies and transformed industries. Questions about the impact of the ‘Information Age’ on warfare and about the effect of the underpinning technologies have spawned a plethora of works by military writers, academics and strategic scholars.

Network Centric Warfare (NCW) has been described as ‘the way we will organize and fight in the Information Age’.³ It envisages distributed forces capable of achieving and leveraging rapid decision superiority in order to deliver massed effects across the battle-space and thereby generate increased combat power.⁴ Following the lead of the United States, the UK Armed Forces are also harnessing advances in information technologies through the adoption of a concept that has been labelled Network Enabled Capability (NEC).⁵ It is claimed that NEC will ‘allow us to prosecute the full range of contingent operations with greater awareness,

confidence and control’.⁶ In order words, the introduction of NEC is expected to disperse the uncertainty and ‘fog’ of war described in the opening quotation by Clausewitz.

It is axiomatic to state that decision making by military commanders is fundamental to the successful prosecution of warfare. Equally, it is self-evident that knowledge underpins successful decision making. Yet there is no broad-based empirical proof that the quality of military judgement has improved with the spread of networked computing and information systems. Nevertheless, we are encouraged to trust that decision making will somehow be ‘better’ in the NEC future.⁷ However, there appears to have been little research into the cognitive dimension of NEC, to explore and challenge the notion that decision making will be ‘better’ in the future.

The Joint Higher Level Operational Concept (Jt HLOC) is the Ministry of Defence’s (MOD) capstone document for articulating ideas about the future operational level of warfare. The Jt HLOC identifies that a future chaotic, non-linear, battle-space and the emerging information environment will threaten traditional mechanistic command behaviours. Commentators have also noted that the abundance of readily available information can become confusing and act as a distraction. Undoubtedly, information systems can be helpful to an extent; however, they are fundamentally blunt tools when it comes to appreciating critical nuanced contexts and to applying military judgement. Furthermore, information management techniques

have not yet advanced sufficiently to meaningfully assist in extracting meaning from the available information. Therefore, this suggests that there is no direct linkage between information related technological advances and improvements in the cognitive processes of military command.

Advocates of NEC assert that it has the potential to completely revolutionise the conduct of warfare.⁸ Yet the constraints of Defence funding have led the MOD to focus on the development of capabilities that are seen as ‘key enablers’, rather than making a more substantial, transformational, investment. These key enablers have been defined as sensors (ISR platforms), communications assets and precision strike capabilities. At best these investments in the physical level of network components can only improve inter-connectedness. Hence, they can only provide Network Enabled *Capacity*. The crucial point being that to leverage these improvements into decisive capability requires concomitant improvements in the cognitive dimension of decision making. Without these cognitive improvements, we shall just have an improved network without an enhanced exploitation capability. While the ‘network’ allows connections to be made, it is people who create the actual connections and thereby exploit the interconnectivity.

Furthermore, all too often particular emphasis on the need for increased tempo of decision making, rather than focussing on the quality, appropriateness and context of the decision. The MOD investment strategy, produced for the 2004

Spending Review, goes even further by stating that:

*“NEC will enable all three Services to operate efficiently and effectively together.....by having a clear picture of the battle-space our forces will have the ability to respond quickly and decisively, delivering the same military effect with fewer combat platforms”.*⁹

Thus NEC is seen as a means of achieving input efficiencies. Clearly this line of reasoning may have been deployed in order to justify investment in NEC; nevertheless, it takes a rather narrow view of military effectiveness. It also infers that there is a direct link between providing improved situational awareness – ‘a clear picture’ – and delivering decisive military effect. However, as Gray observes, while ‘better’ information is always nice to have it cannot be translated into a magical military sword.¹⁰ Moreover, research has shown that more information is not better if you already have what you think that you need.¹¹ This idea is supported by Malcolm Gladwell in his work on the power of ‘thinking without thinking’.¹² He has shown that conclusions reached within minutes are often as good as those reached through careful research and deliberation. He describes such fast and frugal thinking as ‘thin-slicing’ and considers this it is based upon the subtle, or even unconscious, rapid screening of information to identify key elements. Therefore, this all undermines one of the key notions of NEC – that ‘improved’ information can be translated directly into ‘better’ military effect. Consequently, this leads to the deduction that the ardent pursuit of information superiority may be unnecessary, as it fails to take

full account of the apparently limited inputs required by commanders in order to make decisions.

There is a consensus that the complexity, uncertainty and its multi-dimensionally nature mean that war is fundamentally different to other human endeavours. Yet this seems to have been largely overlooked by JSP 777. It is inferred that information superiority will generate not only quicker, but 'better' decisions. The NEC Benefits Chain has shared situational awareness, leading to shared understanding and then 'better' decisions, underpinned by a digitized, connected, network.¹³ It is not completely clear whether 'better' means 'improved', in comparison to pre-Information Age decisions, or whether it means 'better' relative to an adversary's decisions. Nevertheless, some commentators envisage decision superiority, which is defined our decisions being superior relative to the enemy's, as some sort of 'high peak' of digitization. This appears to be a reductionist perspective, which vastly oversimplifies the complex nature of warfare and, especially, underplays the critical importance of the cognitive dimension – of how commanders think and their actual decision making performance.

That is not to say that the provision of improved interconnectedness and sharing of information will not provide the *potential* to make improvements in the cognitive domain. However, the nirvana of making 'better' decisions cannot be automatically extrapolated from improvements in the network infrastructure and information levels. Warfare is too richly textured and too

multi-dimensional, to be reduced to decisive resolution by information superiority. This is because providing better connectivity and managing information – the elements of information superiority – are plainly not the same as strengthening cognition. It seems that too greater focus is placed on the more tangible aspects (of the network) without paying sufficient attention to the cognitive aspects.

It is possible to produce a simple typology to conceptualise the relationship between data, information and knowledge. In such a typology, data is defined as a set of discrete, objective, facts about events. When data is organised, patterned, grouped and categorised i.e. given context, it becomes information and when information is contextualised, that is to say when it is given meaning and put into productive use, it becomes knowledge. Generally, we tend to have a technology orientated outlook of information. This view is based on the information theories developed by Shannon in the late 1940s. He considered communications to be a linear process in which the sender constructs a message, which is then coded and transmitted over a channel. At the receiver there is a decoder which reverses the coding process and changes the message into some form suitable for input to the receiver. This approach has a sound mathematical basis and focuses on the amount of information i.e. the number of 'bits' that are moved over the channel. This approach has been widely used in communications engineering and information technology; it has many strengths,

especially in determining channel capacity and, through the introduction of information entropy, as a measure of uncertainty. However, this systematic approach is actually inadequate for understanding the full richness of information. This is because Shannon's work has a fundamental weakness; it ignores issues associated with meaning and interpretation. When using this information theory approach it is assumed that the message *is* the communication and the possibility of unintended consequences arising from differing interpretations (between sender and receiver) are not considered.

On the other hand, we can take 'social interaction through messages' as a definition of communications.¹⁴ In this case a constructivist approach, developed primarily from anthropology, can be used as the model to consider information. Constructivism views all knowledge as 'constructed'. This is based on the notion that people use mental images and models, in other words frames of reference, in order to understand and make sense of the world. The constructivist approach argues that because of differing perceptions and their differing social experiences the way that each person constructs their representation's and achieves understanding is unique. Therefore, this infers that different people, especially from different cultural backgrounds, will create different models of reality. This explains why individuals can view the 'same' information, or situation, differently.¹⁵ This is a fundamentally important point when considering NEC. Some commentators assert that 'in the

twenty-first century, *information* can lose, and win wars all on its own'.¹⁶ However, this is erroneous. It is actually the understanding and meaning drawn from information and the subsequent decisions made that make such a difference. In itself, information is a passive, neutral, entity. This point, about the criticality of understanding and meaning, is frequently ignored in NEC related literature. This is because the technological based interpretation of information tends to dominant, while the constructivist approach is largely overlooked.

Improving decision making capabilities in the context of enduring uncertainty, rather than attempting to attain certainty, should be given greater prominence. Air Chief Marshal Sir Brian Burridge has reflected about uncertainty in his powerful description of his experiences as the commander of British Forces in the 2003 Iraq War:

"The battle-space is complex and ambiguous.....it's rather like looking into a kaleidoscope and turning the end seeing the patterns merge and change. Our job was to stop the kaleidoscope turning so a single pattern emerged, bringing order to the maelstrom of ambiguity and complexity".¹⁷

This metaphor, as ACM Burridge acknowledges,¹⁸ draws on Kanter's concept of 'kaleidoscope thinking'. This is a way of finding pathways though chaos by looking at situations from different - 'shaken up' - perspectives in order to produce entirely new patterns. It is through the cognitive process of applying knowledge-based judgement that different patterns emerge from the

observed events in the battle-space.

In his recollection ACM Burridge also raises the issue of ambiguity. Ambiguity can be defined as situations where objectives, technology or experience are unclear. As solutions and problems can also be intertwined, this places a significant burden on decision makers. Given the adversarial nature of warfare and because time is often a critical factor, then it can be argued that a 'good enough' decision will often suffice and that 'better' is often the ruin of 'good enough'.¹⁹ Rather than striving for 'better' decisions in the first place perhaps, given the nature of war, we should be settling for 'good enough' decisions? Exactly how decisions are made will be examined in the following sections, which will examine the cognitive processes of sense making and decision making.

Sense making has been described as turning circumstances into a situation that can be comprehended explicitly in words and so serves as a springboard into action.²⁰ Or to put it another way, 'it is knowing what's going on so you can figure out what to do'.²¹ Therefore, sense making has an important place in the cognitive process by providing the decision maker with sufficient understanding and appreciation in order to make decisions. One piece of military based research has shown that a good sense making process actually proved to be more important for producing good decisions than the provision of high quality information (that proved to be of little value).²²

There is also further empirical evidence to show the role that sense making plays in military success. Researchers examined one hundred

and forty nine specific decision events associated with both military successes and failures. Their analysis showed that prior knowledge was relatively less influential than emotions, beliefs, cognitive factors and mental models (all components of sense making). When successful decision events were compared directly with unsuccessful ones, the key discriminating factors were 'did individuals develop appropriate situation awareness' and 'was sense made of the situation'.²³ Again this stresses the importance of cognition, relative to the information superiority focus prevalent in much of the current NEC thinking. Therefore, this links gaining understanding, by synthesising observed events, with previous experience in order make sense and to 'stop the kaleidoscope turning'.

The importance of experience to sense making has also been highlighted in research by Lipshitz and Saul on simulated sea combat by Israeli Defence Force gunboat commanders. They found that experts 'read' situations more accurately than novices. That is to say the experts were able to extract nuanced meaning that non-experts either overlooked or were unable to see.²⁴ Their findings led to the deduction that the experts were able to construct more complete and accurate mental models and, hence, make successful decisions. This notion has resonance with the approach practiced by Napoleon:

"...before entering on an undertaking, I have meditated for long and have foreseen what may occur. It is not genius which reveals to me suddenly and secretly what I should do in

circumstances unexpected by others; it is thought and meditation".²⁵

This leads onto two important deductions. The first being the importance of creating time to think through and to envisage how future courses of action are likely to unfold and, second, the importance of 'out thinking' the adversary, rather than 'out networking' them.

Classically, decision making is portrayed as a logical, step-by-step, process centred on choosing the best option (in terms of outcome) from a comprehensive set of potential alternatives. This is described as the Rational Choice Strategy (RCS) for decision making. RCS deals with complex problems by trying to decompose them into simpler ones; these decomposed elements are then analysed and the results 'pasted' together. By being explicit, articulate and systematic – so the orthodox view goes – decision makers are thinking in ways that deliver optimal solutions. Rational decision making methodologies are based on assumptions of clear, non-conflicting, objectives and of perfect knowledge of the problem.

However, if it is accepted that warfare has a non-linear and unpredictable nature, then it follows that the utility of RCS is undermined as unique situations cannot be resolved through objective analysis.²⁶ Behavioural studies and research have shown that in reality decision making frequently does not conform to the neat processes of prescriptive decision theory. This is particularly true when decision making takes place in the context of uncertainty, within a complex environment and when

there are time pressures. Therefore, this all suggests that, at best, decision making based on rational approaches may only have a limited applicability for military commanders. While the 'rational calculus' of Clausewitz, forms the traditional basis of a systematic military decision making process, as Handel observes, Clausewitz was also fully aware of the crucial importance of non-rational factors stating that '....war is an act of forces, the emotions cannot fail to be involved'.²⁷ Given the limitations of rational decision making models, then alternative approaches (by implication ones using less rational paradigms) are actually employed.

Klein declares that effective decision makers primarily employ a Recognition-Primed Decision (RPD) model which fuses two processes, first intuition to recognise key patterns that indicate the dynamics of a situation and second, imagination to evaluate potential courses of actions.²⁸ In other words, an intuitive decision maker takes the significant points from the decision situation and probes his memory for a contextual recollection. He then uses knowledge about the previously encountered situation to steer his actions in the current situation. As Napoleon has been quoted:

*"the knowledge of the higher conduct of war can only be acquiredby **one's own** [my emphasis] experience".²⁹*

While this may have been true in the past when commanders enjoyed only very limited inter-connectivity, it undervalues how knowledge and experience can now be shared across networks and be used to improve decision making.

By leveraging cognitive resources from across networks, it is argued that thinking superior to one (albeit potentially talented) commander can be produced. In effect, networking can bring more 'brain power' to bear on a problem and this can create a decisive cognitive advantage.

To begin to discuss the importance of networking, it is worth considering the following declaration from Surowiecki:

"Even if most of the people within a group are not especially well informed or rational, it can still reach a collectively wise decision".³⁰

In this assertion he is advocating that, despite individual shortcomings, when aggregated in the right way our collective wisdom – what can be described as the 'wisdom of crowds' - is often excellent. This perhaps appears, at face value, to be a surprising statement and one that runs counter to traditional notions of organisational hierarchies and the concomitant orthodoxy of military decision making.³¹ To properly appreciate the usefulness of networks, we need to turn to mathematics and the study of Complexity Theory and Metcalfe's Law, which formally demonstrate that networks add value.³² Further, if it is accepted that relationships are important for the acquisition of information and that the creation of knowledge is a social process, then networking can be considered as the means that these relationships are enacted and knowledge is created.

Ultimately, it is envisaged that NEC will enable the 'dynamic creation of mission groups enabled by distributed collaborative working'.³³ Nevertheless, even the most

enthusiastic advocates acknowledge that it may be decades before network forms are adopted for *formal* organisational structures.³⁴ However, technological enabled *informal* (or social) networks are already being employed within the military to enhance individual's decision making skills. As we have seen, experience is key requirement for effective decision making. The importance of informal professional networks, in other words communities of practice, for pan-Defence knowledge exploitation is acknowledged in the MOD's Knowledge Strategy.³⁵ Communities of practice are types of informal network that can help personnel develop greater professional competence through the exchange of ideas between peers. One such manifestation of a community of practice is CompanyCommand.com.³⁶

Originally an Internet based discussion forum, CommanyComand.com has developed into an effective professional forum for connecting past, present and future company commanders in the United States Army.³⁷ It aims to support officers facing professional challenges by providing a means of seeking advice from their peers who have been in similar situations. This type of peer-to-peer development challenges some traditional assumptions about development, especially the paradigm of drawing on the wisdom of anointed experts. However, it follows the core tenet of organisational learning, in that it enhances the ability to create. In particular, it allows officers to draw on knowledge that has grown out another individual's unique experience and it provides context

specific (rather than broadly applicable) advice. Furthermore, it is evident from the success of CompanyCommand.com that people have greater trust in and; therefore, are more receptive to, advice from their peers. This is because there is an emotional dimension to the support provided.

In CompanyCommand.com we see information technology being used as a platform to facilitate networking, trust building and learning in order to develop improved decision making competencies. This informal network has grown organically and provides a vibrant illustration of how network enabled capability can be created. It offers a model of how for future, Information Age, military decision making can be augmented in order to improve cognitive performance.

Conclusion

The period of the late twentieth century and early years of the twenty-first century is now commonly accepted as the Information Age. Striking developments in information and communications technologies have enabled the rapid growth of post-industrial economies and have facilitated increasing globalisation. However, there are divergent opinions about the effect that the Information Age will have on the conduct of future warfare. Nevertheless, it is clear that the growing ubiquity of communications and the pervasiveness of digital information will present challenges for future, operational level, military commanders. In the UK, it is intended that NEC will enhance the efficient sharing and exploitation of information. This,

in turn, it is expected will enable commanders to make 'better' decisions and thereby deliver decisive military effect. However, current investments in NEC are principally focussed on the physical infrastructure of the underlying networks. This will provide improved interconnectedness, which can be depicted as Network Enabled *Capacity*. Yet to leverage these improvements into decisive military capability requires accompanying improvements in the cognitive environment. While 'the network' allows connections to be made, it is people who exploit the connections. Attempting to acquire complete information about the future battlespace is a key notion associated with the underpinning philosophy of NEC. Yet this idea fails to take account of the actual cognitive processes associated with decision making. There is an expectation that NEC will, in some way, dissipate the 'fog of war' and thus reduce the chaotic aspects of warfare. This is an example of reductionism, as it fails to take account of the importance of interpreting and exploiting meaning from information. This is important because, in itself, information is a passive entity. It is actually the understanding gained from information, and the subsequent decisions made by commanders based on this understanding, which create decisive cognitive advantage. The crucial point about the criticality of understanding and meaning is frequently neglected by the advocates of NEC. This is because the technological based interpretation of information tends to be dominant, while the constructivist approach is largely overlooked. Put simply,

improving networks and managing information is not the same as strengthening cognition.

There is a persuasive argument that the human dimension and, especially the Clausewitzian concept of friction, will not be eliminated from warfare by better information-led technologies. The abundance of readily available information can also become confusing and act as a distraction. Moreover, research has demonstrated that battlefield commanders only use a very small amount of information to make decisions. Therefore, it is a corollary that the effort expended in collecting information is often out of all proportion to its usefulness. It is the effectiveness of commander's cognitive performance, rather than the ability to gain information superiority, that is critical to achieving decisive military advantage.

Successful commanders must also be able to make decisions despite the enduring uncertainty of warfare; this ability has been described as 'kaleidoscope' thinking. Classically, the decision making process has been viewed as rational practice centred on defining the problem and then choosing the optimal solution from a number of options. Here the logic of right brain thinking is dominant. However, in reality, intuition (which associated with the, less rational, left brain) based upon knowledge and experience, is actually central to the way experts make decisions. Experts predominantly employ a type of naturalistic decision making which is characterised by the use of experience in order to rapidly sift through their memory's searching for familiar patterns, rather than concentrating on

choosing among options. They also tend to focus on 'satisficing', which is looking for a solution that works, rather than the optimal one. Here information-based reasoning is used to augment intuition.

Despite individual shortcomings, a group can produce collectively wise decisions. Rather than just relying on his own cognitive capabilities, both the experience and 'thinking power' available to a commander can be enhanced by exploiting networks. Relationships are important for the acquisition of understanding, as the creation of knowledge is a social process and trust is said to reduce the impedance of information flows across networks. Therefore, informal networking can be considered as the means that these relationships are enacted. In effect, networking allows the collective 'brain power' of a group to be brought to bear on a problem. It also enables learning through the transfer of experience. CompanyCommand.com is an example of information technology being used as a platform to successfully facilitate networking in order to improved cognitive performance. This informal, social, network has grown organically and provides a vibrant illustration of how network enabled capability can be created.

Notes

¹ Clausewitz, Carl von, quoted in *Handel, Michael, Masters of War: Classical Strategic Thought* (London: Frank Cass, 2001), p.244.

² See for instance, Lonsdale, David, *The Nature of War in the Information Age: Clausewitzian Future* (London: Frank Cass, 2004), p.1 and Cares, Jeff, *Distributed Networked Operations*,

(Lincoln NE: iUniverse, 2005), pp.1-2.

³ Alberts, David, Garstka, John and Stein, Frederick, *Network Centric Warfare: Developing and Leveraging Information Superiority* (Washington DC: Command and Control Research Program, 1999), p.2.

⁴ *The Implementation of Network Centric Warfare*, Director of Force Transformation, Office of the Secretary of Defense, January 2005.

⁵ NEC is about the "linking of sensors, decision makers and weapon systems so that information can be translated into synchronised and overwhelming rapid effects". The UK Joint High Level Operational Concept, p.3-3.

⁶ *Delivering Security in a Changing World: Defence White Paper*, Ministry of Defence, December 2003, p.11.

⁷ Joint Service Publication 777, Network Enabled Capability, Edition 1, p.8.

⁸ See for instance Meiter, J, 'Network Enabled Capability: A Theory Desperately in Need of Doctrine', in *Defence Studies*, Volume 6 Number 2, June 06, p.189.

⁹ Departmental Investment Strategy, Spending Review 2004, p.6.

¹⁰ Gray, *Modern Strategy*, p.246.

¹¹ Jensen, Eva, 'Good Sense Making is More Important than Information for the Quality of Plans', paper presented at 11th ICCRTS (Coalition Command and Control in the Networked Era), 26-28 September, 2006.

¹² Gladwell, Malcolm, *Blink: The Power of Thinking Without Thinking*, (London: Allen Lane, 2005), pp.11-17.

¹³ JSP 777, p.8.

¹⁴ Fiske, John, *An Introduction to Communication Studies* (London: Routledge, 1990), p.2.

¹⁵ This section draws on ideas by Quintas, Paul 'Theories of Communication' in *Managing*

Knowledge: Communication (Milton Keynes: Open University, 2002), pp.11-23.

¹⁶ McColl, John, 'Adapting Command Hierarchies', *RUSI Journal*, February 2004, p.54.

¹⁷ BurrIDGE, Sir Brian, 'Strategic Guidance and the Context for Air Power' *RUSI Journal*, June 2004.

¹⁸ Reference to 'kaleidoscope thinking' is included in the transcript of ACM BurrIDGE's Windsor Leadership Annual Lecture delivered on 19 November 2003. (Obtained through private correspondence with ACM BurrIDGE).

¹⁹ Schmitt, John, 'How We Decide' in *Marine Corps Gazette*, October 1995, p.17.

²⁰ Weick, Carl, Sutcliffe, Kathleen and Obstfeld, David 'Organizing and the Process of Sense making' in *Organization Science*, Volume 16, Number 4, July-August 2005, p.409.

²¹ Unnamed USAF pilot quoted by Leedom, Dennis, *Final Report, Sense Making Symposium* (Washington, DC: CCRP, 2001), p.7.

²² This conclusion was reached following a study carried out using SO3 level students at the Swedish National Defence College. See Jensen.

²³ Leedom, pp.5-6.

²⁴ Lipshitz, Raanan and Shaul, Orit, 'Schemata and Mental Models in Recognition-Primed Decision Making' in Zsombok, Caroline and Klien, Gary, (eds) *Naturalistic Decision Making* (Mahwah, NJ: Erlbaum, 1997), pp.295-6.

²⁵ Quoted by BurrIDGE. See lecture transcript.

²⁶ Handel, p.43.

²⁷ Quoted by Handel, p.398.

²⁸ Klein, *Sources of Power: How People Make Decisions*, pp.24-30.

²⁹ Lonsdale, 'Strategy: The Challenge of Complexity', p.61.

³⁰ Surowiecki, James, *The Wisdom of Crowds: Why the Many are Smarter than the Few*, (London: Little, Brown: 2004), p.xv.

³¹ This is a tradition with its origins in the 'qualities or traits' approach to leadership. See *Leadership in Defence*, pp.A13-16.

³² See Moffat, James, *Complexity Theory and Network Centric Warfare*, (Washington DC: CCRP, 2003).

³³ JSP 777, p.10.

³⁴ Arquilla, John, and Ronfeldt, David, 'Looking Ahead: Preparing for Information-Age Conflict', p.455.

³⁵ Knowledge Strategy, DG Info/CDMA/06-01-05-01, Version 4.1, 1 March 2004, p.5.

³⁶ Dixon, Nancy et al, *CompanyCommand: Unleashing the Power of the Army Profession* (West Point, NY, Center for Advancement of Leader Development, 2005).

³⁷ Company Command was included in the *Havard Business Review* list of Breakthrough Ideas for 2006, See 'Peer-to-Peer Development', *HBR*, Volume 84, Number 2, February 2006, pp.56-57.

Viewpoint

Space Matters!

By Group Captain (Ret'd) Ian Shields

*“Space is a highly significant area of science policy and it is necessary for the Government to take a strategic approach to space activities... The Space sector has great economic potential. The UK space industry is ambitious and focused... The UK has world-leading space scientists and technologists. Space science both depends on technology and can drive technology developments... We suspect that unfortunately the public is still unaware of the **variety, breadth and importance that space activities play in their everyday lives...**”*

The above quotes (with added emphasis) are from the Summary to the House of Commons’ Select Committee on Science and Technology’s Seventh Report, prepared on 17 July 2007 and titled “A Space Policy”. This report correctly highlighted that space matters to the United Kingdom (and, indeed, to all developed and most developing nations). Since the report was primarily aimed at industry, it rightly concentrated on the economics of space as they impact the country, identifying the opportunities that exist and capturing those areas where the British still enjoy pre-eminence. The report also acknowledges that the UK does not fund launchers or participate in human spaceflight to any great extent, and warned that the country was trading heavily on past

investments and that current financial commitment is limited.

The nub of the issue is that space has become a – arguably *the* – mainstay for the public, private, commercial and, crucially, defence sectors but in such an insidious way that our growing dependency on space has left us markedly vulnerable. This article will initially explore the potential economic benefits to the country of space, but will then highlight how we (and particularly defence) have become dependent on space to the extent that it represents a potential single point of failure. Key vulnerabilities are explored next, then threats to space security are considered before the article concludes by arguing that we need to take a more robust stance on space and that we, as airpower practitioners, are best placed to take the lead.

First, from the wider perspective, some good news for the country. As the Science and Technology Select Committee discovered, there is every reason for the UK to invest in space. That little that has been invested so far has brought financial returns that are measured in multiples of five, seven and even ten: the country has benefited directly in a considerable manner from the small investment to date. The spin-offs are harder to quantify, but certainly exist in

terms of transferred technology and Britain's place as a leading scientific and technological contributor. But the economic potentials of space are only just now beginning to be recognised. For example, a metal-rich asteroid of just two kilometres size (of which there are many) would yield ore priced at some \$US 9 *trillion* at today's prices. Meanwhile, the moon is known to contain significant deposits of Helium 3, vital for nuclear fusion. One Space Shuttle load of Helium 3 would provide enough Helium that once converted into electricity through nuclear fusion could power the entire United States for one year. While neither are practical propositions yet, as resources continue to be depleted on Earth, such options will become increasingly attractive, and therefore financially viable; and where financial viability leads technical ability will soon follow. The Government is alive to the potential, and the creation of a full-blown United Kingdom Space Agency (UKSA) on 23 March 2010¹ was recognition that the UK still has a lead in certain aspects of space (for example, small satellites)² and the new Agency will seek to harness these advantages and boost this high-technology, high-return sector. What remains less clear is how UKSA will link with the European Space Agency, or, of more concern to the defence and security sector, how the MOD will interface with UKSA.

So much for good news, but in what ways have we become vulnerable as a society and as a military due to our reliance on space? Let us first examine societal dependency, before considering more carefully the military position. The Government

has identified eight sectors (communications, emergency services, energy, finance, food, government, health, transport, water)³ that are critical to the well-being and continued functioning of the country, and how they might protect them from attack or interference from any direction. Every one of these sectors depend on space to a greater or lesser extent. Consider for example both food and transport: your local supermarket does not have a vast warehouse full of food at the back of the store, and that stock it does carry is non-perishable. "Just in Time Logistics" has been embraced by the supermarkets to a very large extent, and they rely on satellite tracking (not to mention SatNav to guide their drivers, albeit sometimes with amusing consequences) of their goods. Those who recall the petrol strike of the year 2000 will recall how easily the country was put under threat by simple blockades of fuel depots, highlighting how little resilience our infrastructure has.⁴ Communications is an obvious example, but it is the reliance on the timing signal from the Global Positioning System (GPS) that has become the most critical. For example, for mobile telephones to function without interference as we move around the country, the various radio masts that they utilise must be synchronised. That synchronisation is achieved from the GPS signals. For the banking sector, every electronic transaction is accurately time-stamped (important if you are trading millions of pounds around the globe) and GPS again provides that timing signal. Synchronisation of the alternating current output from

power stations is again achieved by the timing signal from GPS. Since the very function of GPS relies on a highly accurate (<10 milliseconds) and stable timing signal⁵ that effectively offers atomic clock performance globally and is the most widely-used aspect of GPS.

If the wider community is reliant, then, on space what of the military, and particularly the Air Power user? Here the case is, if anything, more stark. The first Gulf War is commonly held as being the first conflict where space played a very significant role:

*"For the first time in history, space systems were employed during the Persian Gulf War at not only the strategic level of war, but also at the operational and tactical levels as well. Space-borne assets had a dramatic effect on the ability of the operational level commander to successfully plan and prosecute a comprehensive warfighting campaign."*⁶

Analysis of the coalition success in this conflict highlighted how networked information and significant situational awareness gave the Americans and their allies an overwhelming asymmetric advantage. But it also revealed how dependent we have become on space-based assets and how, therefore, space represents a potential single point of failure. Since then, our dependency has grown to what amounts now to an overwhelming reliance. Clearly expeditionary operations, and in particular our current operations in Afghanistan are reliant on space for functions such as satellite communications, data-links, surveillance, GPS (be that for navigation of a tank or as an element of the terminal guidance

for a precision-guided munition), controlling at range an unmanned air vehicle and then distributing its data. More tellingly is the extent to which we, in the main unknowingly, have come to rely on space for every single sortie. Much of our meteorological data is now resourced from space, with increasingly sophisticated satellites providing far more than visible-band pictures, but wind, temperature and moisture content are now all primarily derived from satellite data⁷ rather than reports from aircraft or the now defunct network of weather ships.⁸ Our navigation systems are almost totally reliant, at least to bound Inertial Navigation System platforms, on GPS. An increasing part of our weaponry is GPS guided. And the ubiquitous GPS timing signal allows us to synchronise frequency-hopping secure radios. It is becoming doubtful not whether we could mount a training serial that is entirely devoid of space products, but whether it would be safe enough to do so.

Accepting that we have become reliant on space, how vulnerable is the space sector in reality? This article will next consider five key areas of brittleness (launch and control sites, communications links, the Electro-Magnetic Spectrum (EMS), the predictability of orbits, and the platforms themselves) before considering one particular threat.

Launch and control sites are large, fixed and in known locations. As such they are obvious targets and vulnerable to conventional, kinetic attack. While attacks against launch sites would have little immediate effect, destroying command and

control hubs, or seizing them with the intent to cause mischief, could have immediate repercussions. Indeed, it is this latter point, the command and control aspects, that represents the greatest weakness. Satellites send and receive data almost constantly, including course correction data to avoid other satellites, the increasing quantity of man-made space debris and natural hazards such as meteorites. These signals are invariably encrypted, but while military satellites are protected to a very high degree the same cannot be said for commercial platforms, where the driver is data throughput (revenue earning) rather than security. Furthermore, to interfere with the guidance signals from a satellite would not require the full panoply of a state to engineer and therefore there is a significant vulnerability in these signals. Moreover, hostile organisations may not seek to take total control of a satellite, but to use it for their own purposes either as a broadcast or re-broadcast platform, or to task it for their own purposes if it was, say, a surveillance station.

Developing this issue further, the EMS is itself of only limited width and although developments such as low-power data-streams, directional antennae and technology allowing bandwidth utilisation have all increased its utility it is finite in width. This leads to a degree of predictability in its use and exposes a further weakness. And the satellites themselves have not only a limited number of useful orbits, many of which are already very crowded, but the orbits are highly predictable. Knowledge of when a particular

satellite will be in view offers both defensive and offensive possibilities but it is increasingly true that despite its vastness it is remarkably hard to hide in orbital space.

Finally, what of the platforms themselves? Of the five key areas of vulnerability, this, counter-intuitively, may be the least. While the operating environment in space does represent a threat due to extreme radiation and the destructive energy of collision with even very minor particles⁹, direct man-made threats to objects once in orbit is limited. There are a variety of methods of initiating a kinetic attack on a satellite, be that from a ground-based launch site or from another satellite, but both require very advanced computing power to solve the targeting issue and is, at least for the present, the preserve of major state actors. The satellites themselves are, then, relatively immune from direct interference.

They may be, however, particularly vulnerable to one type of attack, which is the use of an Electro-Magnetic Pulse. From 1958 – 1962 both the US and the (then) USSR conducted a series of exo-atmospheric nuclear tests to test both their potential to defeat incoming Inter-Continental Ballistic Missiles, and to destroy satellites. They proved that the thinner atmosphere above about 50 km altitude had a significantly less attenuating impact on EMP than those closer to the ground. But the tests had unintended effects also. For example, on 9 July 1962 the US detonated a 1.4 Mega-Ton yield device 400 km above Johnson Atoll in the Pacific Ocean, codenamed Starfish Prime. This test

damaged electronics in Honolulu and New Zealand (approximately 1,300 kilometers away), fused 300 street lights on Oahu (Hawaii), set off about 100 burglar alarms, and caused the failure of a microwave repeating station on Kauai, which cut off the telephone system from the other Hawaiian islands.¹⁰ Starfish Prime also produced an artificial radiation belt in space which soon destroyed three satellites (Ariel, TRAAC, and Transit 4B) and minor degradation to three others (while Cosmos V, Injun I and, most famously, Telstar). Given how few satellites were then in orbit compared to today, it can be readily seen how significant the impact of an exo-atmospheric nuclear detonation would be. That said, any adversary undertaking such an action would themselves suffer the same significant damage to their capabilities, while it would be impossible for a state to deny their actions, such is the monitoring capability of both launch and nuclear capabilities. In 1963 the Partial Test Ban Treaty ended atmospheric and exo-atmospheric nuclear tests, while the Outer Space Treaty of 1967 bans the stationing and use of nuclear weapons in space.

Having established our dependence on space and explored some of the vulnerabilities, what should we do about it? There are, I would argue, two steps that we should take, all of which centre around the theme of resilience. First, we must acknowledge the extent to which we are reliant on space and seek to educate both broadly and, by investing in a cadre of space expertise, narrowly and deeply. Secondly, we should explore how we can maintain access to space in

the event of disruption, be that from man-made interference or natural phenomena such as space weather.¹¹ While it may not be necessary for the UK to develop a totally indigenous satellite launch capability (although with the advent of the Virgin Galactic and the development of ultra-small satellites such an option might exist), having the ability to launch additional satellites to replace damaged ones or to create new capabilities at short notice (a programme known as Operationally Responsive Space) has attractions. Likewise, closer cooperation with potential partners (such as more collaboration with the European Space Agency) and more dual-use of commercial satellites would increase our resilience.

But why should Air Power proponents take a lead in such advances? Here are three reasons. First, the leading proponent of Space Power remains, and is likely to continue to be, the United States. There the USAF has the lead for the military applications of space, and we are well-placed to build on our traditional links to them. Second, with our space observation capability based around RAF Fylingdales we already have an understanding of space, and thus could provide the core of a space cadre. Third, space, like the air, is ubiquitous and although the laws of aerodynamics are replaced by Keplerian physics when it comes to orbitology, there is common understanding between Space Power and Air Power.

In conclusion, the UK is reliant on space to a degree that is hard to recognise, so pervasive has our use of the environment become. There are

weaknesses and vulnerabilities in our present approach, but the first hurdle to be overcome is recognition of the threat that the loss of space would represent. This in turn would allow the development of resilience and plans to mitigate some the threats outlined here. Space matters, as an opportunity for the country, for the smooth-running of our infrastructure, and particularly for defence. Air Power proponents are well-placed to lead the debate on how to build space resilience, but it is a debate that is overdue and needs to be undertaken.

Notes

¹ See, for example, <http://news.bbc.co.uk/1/hi/8579270.stm>

² Surrey Satellite Technology Limited, based at Guildford, remains a world-leading company. See: www.sstl.co.uk.

³ www.cpni.gov.uk.

⁴ There is a good reminder of the effects at: <http://news.bbc.co.uk/1/hi/uk/921360.stm>.

⁵ GPS functions on a ro-ro-ro time differential system. For an excellent introduction, see the US Government website <http://www.gps.gov>.

⁶ Report by Lt Col S J Bruger USAF, US Naval War College, RI, Department of Operations: "Not Ready For the First Space War, What About the Second?" <http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA266557>. See also: "Joint Warfare and Military Dependency on Space", Maj J L Caton USAF, Joint Force Quarterly Winter 1995/6 (<http://www.fas.org/spp/eprint/1310.pdf>).

⁷ <http://metoffice.com/research/nwp/satellite/>.

⁸ The International Civil Aviation

Organization (ICAO) established a global network of 13 weather ships in 1948. The agreement of the weather ships ended in 1990. The last weather ship was *Polarfront*, known as weather station M ("Mike") at 66°N, 02°E, run by the Norwegian Meteorological Institute. *Polarfront* was put out of operation 1 January 2010.

⁹ The US Space Shuttle on its first flight suffered a cracked windscreen from a fleck of paint in orbit. Since then, the Shuttle has always been flown backwards so that the engines, not used for re-entry, act as a shield to protect the cockpit and its delicate human crew.

¹⁰ <http://glasstone.blogspot.com/2006/03/emp-radiation-from-nuclear-space.html>

¹¹ We are overdue a significant solar flare. That of 2 September 1859 had a significant impact on the relatively primitive but robust telegraph system, with operators reporting electric shocks from the equipment as far apart as Philadelphia in America and Bergen in Norway (<http://www.thenakedscientists.com/HTML/articles/article/the-biggest-solar-storm-in-history>).



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