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25th Anniversary Edition

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RAF Air and Space Power Review

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ROYAL AIR FORCE
Centre for Air and Space Power Studies

Foreword

by Air Chief Marshal Sir Richard Knighton, Chief of the Air Staff

We live in a world which is more unstable and therefore more dangerous than it has been for some considerable time, with multiple and multiplying threats from authoritarian regimes including Russia, China, Iran and North Korea. There is more risk of us being drawn into a peer conflict in Europe than at any time over the past 30 years. The war in Ukraine has shone a light on our readiness for war and our way of war. We must also consider the wider threats to international security from the ongoing conflict between Israel and the terrorists of Hamas, as well as other state-sponsored groups including Hezbollah. And the longer-term threats to the current international order posed by an increasingly assertive China, especially regarding Taiwan.

Deterrence is fundamental to our security, and this relies upon having credible capability and maintaining our preparedness to use it. The NATO Alliance remains the cornerstone of our security and we need to be ready to fly and fight and succeed on operations, alongside our NATO Allies and Partners. In parallel, we also need to be ready and resilient to conduct operations across the Middle-East and into the Indo-Pacific, to support our allies and our strategic interests.

We are entering a time where we need to be ready to fight wars of survival, not just wars of choice. To win, we will have to deliver air and space power effectively so that we can deny our adversaries their freedom of manoeuvre and wherever and whenever required, defeat them decisively. The air power experts who have contributed to this 25th Anniversary edition are in the vanguard of our most innovative and forward-focussed thinkers. And their thoughts offer many of the answers which we will need to succeed.

ROYAL AIR FORCE
Centre for Air and Space Power Studies

Introduction

by Group Captain Paul Sanger-Davies

Welcome to our 25th Anniversary Edition of the *Air and Space Power Review*

The first edition was published in 1998, at the suggestion of the former Director, and now the eminent Air Chief Marshal, The Lord Peach of Grantham. Over the last 25 years the *Review* has endeavoured to publish a wide variety of military-related academic articles and papers to promote air and latterly space power thinking. The objective has always been to inform and generate discussion and debate across a diverse spectrum of related topics, with many authors having their works published for the first time. Writings have covered contemporary issues as well as future focussed and historical subjects. While each edition looks to offer a variety of articles, the Editorial Board has taken the opportunity over the years to produce special editions, especially to cover anniversaries or themes. The most recent of these was a world first, all-female edition, published earlier this year, to celebrate women's contribution to military academia. The broad nature of the topics offers the readership the opportunity to delve into subjects of interest and over the years we have seen a broadening of studies accompanied with a widening of the readership, not only at home but overseas. We aim to achieve ever greater accessibility to our articles, both present and historical, and also to expand our international audience through improved digital accessibility.

To mark this special milestone the Executive Editorial Board have invited contributions from former Directors of Defence Studies (RAF). The first article was written by the first Director of Defence Studies and one of the world's leading air power thinkers, Air Vice-Marshal (Retd) Tony Mason. Written in 1991 for the *Hawk Journal* it looks at airpower following the end of the Cold War, highlighting a number of observations, which are still pertinent today. The second article, by Air Vice-Marshal (Retd) Andy Vallance, was published in the first edition of the ASPR (then just titled *Air Power Review*), in 1998. The article looks at the future challenges of air power and presents an argument for a unified 'purple' air C2, and albeit written 25 years ago it is still an ongoing debate that ebbs and flows depending on the nature of the conflict. Air Commodore (Retd) Andy Lambert, now a military historian and lecturer, wrote a paper for the Council of Military Education Committees, in 2017, reprinted here, on Air Power Past Present and Future, with analysis of various conflicts that raises the spectre of how developing technologies may be used by our adversaries.

We follow with two viewpoints from former Directors. Firstly, from Air Commodore (Retd) Al Byford, with a personal account of his experiences in Operation Granby (the First Gulf War). This is a first-hand account from a then young pilot thrust into the combat arena of the Gulf, from a Cold War deterrence role in Germany. While offering some critical analysis from his

experiences they undoubtedly shaped his future thinking and the employment of air power. The second comes from Air Commodore (Retd) Pete Gray, now an Honorary Chair in Air Power Studies at the University of Wolverhampton. Here he offers a personal reflection on air power thinking, especially written for this ASPR edition, looking at some of the cyclical arguments or paradoxes that have existed over the years. A reflective look from one of our greatest air power 'pathfinders', who has been at the very forefront of air power academia both during his time in the Service and ever since.

The final article is a Defence Research Paper, chosen not only for its erudite analysis and interest but to demonstrate the broad spectrum of articles the ASPR now publish from Service personnel. This Paper, from Group Captain Louise Henton, tackles the issue of military culture and human rights violations that were committed in Iraq in 2003, asking the question of what needs to change to prevent reoccurrence.

In a first, the ASPR is publishing a speech. Made on the eve of the RAF's Hundredth Anniversary, the address was given by former Director Air Vice-Marshal (Retd) Marten van der Veen, at the RAF Club, London, on the Battle of Britain. It eloquently puts the events of 1940 into a historical context and describes the coming of age of the world's first independent air force, which set its course for future conflicts as a Service in its own right.

To conclude, this special edition presents four book reviews. The first, by Squadron Leader Chloe Bridge, reviews *Blood, Metal and Dust* by Ben Barry, which looks at how the conflicts in both Afghanistan and Iraq ended in failure. In the second, Wing Commander Nigel Jones reviews *The Russo-Ukrainian War, The Return of History* by Serhii Plokhy. This is a study of the war to date from one of the world's leading experts on Russia and its relations with Ukraine, which puts the conflict within its historical and strategic context. *Air Power in the Falklands Conflict: An Operational Level Insight into Air Warfare in the South Atlantic* by Group Captain John Shields, is reviewed by Flight Lieutenant Chris Whelan. Here, the author provides analysis of air power at the operational level using considerable archival and anecdotal evidence to support his case. With this year being the 80th Anniversary of Operation Chastise, Flight Sergeant Paul Marr looks at the classic by Wing Commander Guy Gibson VC - *Enemy Coast Ahead: The Illustrated Memoir of Dambuster Guy Gibson*. This is a very personal first-hand account not only on the raid itself but the wider Bomber Command mission. Written in 1944 and described as one of the great true stories of the Second World War, it is an account of incredible bravery that should have wide appeal to the historian and those interested in the realities of warfighting in the air.

Sadly, we lost AVM Tony very recently, as he passed away whilst watching the Remembrance Sunday Commemoration coverage on television. One of our greatest air power thinkers and writers, and the very first Director of Defence Studies (RAF).

We stand on the shoulders of giants.

Article

Beyond the Cold War: Air Power Over a Flat Earth

By Air Vice-Marshal (Retd) R A Mason

Originally published in *The Hawk Journal*, 1991

Biography: Air Vice-Marshal (Retd) Tony Mason had a distinguished Royal Air Force career, attending both the United States Air Forces's Air War College, Alabama and the RAF Staff College, Bracknell. He was Director of Defence Studies in 1976 and became Air Secretary in 1985. Retiring in 1989 he was made an honorary professor at the University of Birmingham and subsequently was a specialist air adviser to the House of Commons Defence Committee. An Honorary Fellow of the Royal Aeronautical Society and a Deputy Lord Lieutenant of Gloucestershire he was Leverhulme Airpower Research Director, at the Foundation for International Security.

Introduction

The End of the Cold War

At the beginning of 1991 the generals were restless in Moscow. They foresaw the end of Empire, renunciation of ideology and loss of status. Their armed forces remained in eastern Europe in large numbers; but now an embarrassment rather than the shock troops of a tightly controlled anti-western alliance. The Conventional Armed Forces in Europe (CFE) agreement was the symbol and the reunification of Germany the reality which in 1990 marked the ending of 45 years of confrontation between east and west.

It was difficult to see how even the most revanchist of authoritarian regimes in Moscow could reimpose its hegemony on the reawakening nationalities across its western frontiers. The USSR, in whatever future political form, would continue to be a great power, wielding little other than military influence, with a legitimate interest in European affairs. But now it lacked ideological credibility and, on land, the military disposition to threaten or intimidate western Europe. An introspective, disintegrating, bankrupt but heavily armed USSR could be a destabilising element, but it could not sustain its previous position as confrontational protagonist. The Cold War was ended.

The Cold War and Air Power

It is difficult to exaggerate the influence on air power which the Cold War exerted. At the end of World War II, the three great military powers with large air forces were the USA, UK and USSR. Subsequently, with rare exceptions, US military aviation technology set the benchmark for the rest of the world. In turn its evolution was driven by either the perception of threat from, or the need to retain advantage over, the USSR.

Air power has only existed since World War I, yet for three fifths of that time aircraft and weapons procurement, force structure, strategy, tactics and doctrine of the world's strongest nations developed in the perception that they would sooner or later be deployed with little warning against each other in a conflict with its epicentre in Europe. Defence budgets, even in those countries with worldwide interests or pretentions, were largely rationalised by reference to 'the threat' across the Inner German Border.

Conflicts which broke out virtually everywhere else in the world but Europe were regarded uneasily by the West, and especially by the USA, as distractions from the 'real' issues. The characterisations of the Korean War by General Omar Bradley as 'The wrong war, in the wrong place, at the wrong time' could have been repeated on many subsequent occasions. 'Lessons' from conflicts in the third world were those which could be read back onto the central stage. In the United States, the sectional interests of the Navy and the Marine Corps sustained procurement programmes for third world operations but they were generally peripheral and always placed in priority below those directly driven by 'The Threat'.

Air Power in the Cold War

Because the confrontation dissolved in rapprochement rather than exploding in violence it is only possible to examine what was expected of air power, rather than what it did or indeed could have achieved.

Nuclear Deterrence

Within 18 months of the ending of World War II, B29s of the USAAF similar to those which had dropped the atomic bomb on Hiroshima and Nagasaki were temporarily deployed to Europe after two C47 transports had been shot down over Yugoslavia by Soviet fighters. Two years later, in July 1948, three Groups of B29s were moved to Europe shortly after the beginning of the Berlin Airlift. It was believed at the time that the USSR had three million men under arms and 15,000 aircraft. The United States Joint Chiefs of Staff and the newly formed Western European Union Defence Organisation were agreed that there were insufficient ground troops and in theatre aircraft to counter such formidable Soviet strength. Deployment of the nuclear capable B29s was the first example in the confrontation of western air power being called upon to redress the quantitative imbalance in theatre. During the next 42 years the specific roles of air power were to fluctuate, but underlying them all was the assumption that western air power would redress a military imbalance which in several respects could always favour the Warsaw Pact.

The ad hoc deployment of the B29s evolved into the Strategic Air Command leg of the United States strategic deterrent triad. The regular presence of B52s in west European skies became a symbol of the US 'linkage' in NATO's strategy of flexible and appropriate response. Missile-carrying submarines were only visible when off patrol; intercontinental ballistic missiles in their Wyoming silos not at all. The alert state of the B52 fleet on the other hand resembled an international barometer, with a needle moving towards 'stormy' at the time of the Cuban crisis of 1962 and the Arab-Israeli conflict of 1973.

From the 1950s onwards, aircraft shared the responsibility for NATO's theatre nuclear capable weapon delivery. The persistent failure of the continental allies to raise sufficient ground forces to counter Warsaw Pact numerical superiority led to the inclusion of 'tactical' nuclear weapons in NATO's inventory. Strategic concepts were modified over the years but until 1990 the 'dual capable' aircraft allocated to SACEUR were not only among his most powerful weapon systems but also a potent symbol of alliance commitment to nuclear deterrence and, if necessary, riposte. The conceptual shift from the 'tripwire' of the 1950s to the post-1968 adoption of the NATO MC/3 strategy of flexible response modified the possible timing of western tactical nuclear use, but not the significance of its presence in a posture which sought to give an opponent no hope of conventional victory and every fear of unacceptable destruction and further escalation.

Conventional Warfighting

Whereas their nuclear roles remained relatively constant during the Cold War, the potential contribution of NATO's air forces to a war fighting strategy increased considerably in the later

years. The acquisition by the USSR of its own strategic and theatre nuclear weapons; a return by the Soviet general staff in the 1970s to concepts of highly mobile conventional warfare within an overall nuclear environment; a large-scale expansion of both quality and quantity in the Soviet Air Forces; the emergence and impact of high technology on western military aviation: all these factors combined to increase the contribution of air power to the posture and strategy of both alliances.

In 1948 the allied airlift had thwarted Stalin's attempt to starve Berlin into submission. By 1990 the ability of air power to strike, reinforce and redeploy at high speed, short notice and over long distances had become the major allied conventional counter to Soviet operational advantages. The Warsaw Pact possessed numerical superiority on the ground; concentrated armoured forces in close proximity across the inner German border; the advantage of time, place and extent in any outbreak of conflict; and contiguous breadth and depth for reinforcement and attack exploitation back across eastern Europe to the USSR.

On this side of the inner German border, the allied ground forces were outnumbered and not, in peacetime, deployed in their defensive positions. War time dispositions had to be met by redeployment of regular forces and mobilisation of reserves on the continent, across the Channel and from north America.

Not for nothing did NATO air power become known as 'the force of the first hours'. In crisis, and hopefully before the outbreak of conflict, air transports would redeploy men and equipment. The natural geographical obstacles of Atlantic, Channel, Skagerrak, Alps, Pyrenees, Adriatic and Aegean could only be overcome in the expected timescales by air. In the battle area, tactical air mobility, resupply and reinforcement would have to amplify those allied ground forces facing the Operational Manoeuvre Groups and their exploiting armoured echelons.

The Operational Manoeuvre Groups themselves had to be blunted, their supporting echelons interdicted, and their close air support destroyed. In classic air power terms, allied air supremacy had to be established to ensure that NATO aircraft could attack unimpeded, while denying the Warsaw Pact air forces their opportunities to contribute decisively to the land battle.

The USSR, since the earliest days in the Revolution, had fully grasped the significance of air power in modern warfare. Fortunately for the west, the evolution of Soviet offensive air power had been impeded by the pre-World War II purges, by Stalin's post-war concentration on air defence, by Khruschev's allocation of priorities to surface-to-surface missiles, and by consistently inferior aviation technology and military training. By the late 1980s however, the heavy investment in air power by the Brezhnev regime in the 1970s was beginning to pay dividends.

The Voroshilov General Staff Academy taught a comprehensive concept of pre-emptive air attack coordinated with a combined arms offensive to achieve and exploit air supremacy. Mig 29, SU 27, SU 24, TU 22M, TU 160 and several new helicopters had narrowed western technological advantage. The impact of perestroika and the Afghan experience appeared to be injecting a new operational realism into SAF combat training. In any conflict between east and west, the outcome could have been ultimately determined on the ground, but victory would have undoubtedly gone to the alliance whose air forces had been successful.

From the outset of the Cold War, air power had been the cornerstone of the allied deterrence posture; it was now also the key to war-fighting strategies on both sides. By 1990 the west still retained the advantage, but it would have been a fierce contest.

The Cold War had dominated the evolution of air power, but by 1990 the judgement of Marshal of the Royal Air Force Lord Tedder in 1947 was as valid as ever … 'although the methods of exercising air power will change, it will remain the dominant factor as long as power determines the fate of nations'.

The Impact of the Thaw

If the Cold War did drive the evolution of modern air power, and within it air power was the dominant military factor, it follows that the ending of the Cold War must have far reaching consequences for its future. Now however, the overriding influences are likely to stem from political and economic factors at least as much as from military technology or concepts.

Changing Circumstances

The most obvious change in the political environment is that the members of NATO no longer perceive the presence of a threat to their national existence or way of life. For the foreseeable future each can decide how much it wishes to invest in defence and how far it Is prepared to commit armed forces to conflicts beyond the NATO area. Most have already begun unilateral revisions of defence procurement and military structures. Moreover, not only is the threat perceived to have disintegrated, but with it the need to keep armed forces at an advanced level of defence readiness. There is no other potential enemy with the capability to strike suddenly at western Europe, although this assumption may be tempered among the alliance members of NATO's southern flank.

Future threats to international stability are not difficult to identify on any continent, including Europe. None however are likely to provoke conflict on the scale of that hitherto feared in the Cold War, when the resources of two superpowers and 21 other industrialised countries would have been committed. Nevertheless, while the scale may be reduced, the complexity and sophistication of future conflict will not be. The USSR has not foresworn commercially motivated arms sales, while western arms manufacturers will be seeking to make good their last Cold War markets. Meanwhile other countries will continue to develop their own indigenous arms industries. Third world countries, with few exceptions, may be unable to

sustain large-scale conflict for very long without external assistance, but the opening stages of such conflicts are increasingly likely to be dominated by state-of-the-art military technology.

Whatever the outcome of the Gulf crisis and the shape of future political structures in both Europe and the USSR, it is possible that multinational operations under either the United Nations or some other cooperative auspices will become more frequent. Thereby the incentive for any one country, including even the USA, to sustain forces large enough to support unilateral power projection worldwide, may diminish.

Among most Cold War participants, the incentive has already diminished and the search for 'peace dividends' has begun. Short of a worldwide catastrophe, it is unlikely that the Gulf crisis will do little more than temporarily deflect the search. If, as some economists predicted at the beginning of 1991, the world was moving towards economic recession, pressure in reducing expenditure on armed forces would be further increased.

Compared with all those factors conspiring to drive reductions in military expenditure, the impact of the CFE agreement on western armed forces is negligible, and on western air forces: nil. It should however be noted in passing that the Soviet Air Forces will continue to be numerically superior to those remaining in western Europe: unlike the future balance of forces on land.

In sum therefore, the environment for air power in 1991 is marked in the west by perceptions that armed forces can be reduced; that readiness can be relaxed; that while the need may arise to deploy military force, the absence of direct threat will permit choices in both principle and method of response; and that a peace dividend must be made available.

Implications for the Future

The last time there was such an international environment was before World War II. Much has changed since then, but in speculating about future developments in air power, it may be timely to look back occasionally to pre-Cold War days, if only to avoid repeating some earlier mistakes.

For example, with hindsight it is clear that the vision of the early air power theorists exceeded the technological capabilities of their age. Consequently, appreciations of the impact of air power tended to concentrate on its failure to meet expectations, rather than objectively on its dramatic and pervasive impact on modern war. Conversely, both expectation and reality were too often disdained by admirals and generals who did not understand air power but recognised threats to their own budgetary allocations when they saw them. Now, 60 years on, there is no excuse for either exaggeration or ignorance.

The evidence of World War II and numerous subsequent conflicts indicates that if the opposition has air power, then air supremacy is essential for the success of friendly forces on land or sea. If the opposition has no defence against air attack, he has little chance of

sustaining other operations. On the other hand, there is no conclusive evidence that sustained attacks on civilian targets will either bring down a government or destroy its capability to make war. The Blitz on Britain failed; the combined bomber offensive on Germany weakened Hitler's war effort and temporarily, as in Hamburg, demoralised sections of the population. The bombing of Hiroshima and Nagasaki abruptly ended the war in the Pacific but Japan was already preparing to sue for peace; the Linebacker II campaign over North Vietnam in 1972 appears to have accelerated the inclination of the Hanoi regime to negotiate.

In other words, the ability of any air force to win a war on its own is likely to remain in doubt – whatever the outcome of the Gulf crisis. There is one qualification to this generalisation. Several independent raids by the Israeli Air Force during the last decade in the Middle East, and by the United States on Libya in 1986 have demonstrated the capacity of modern air power to be used like a rapier against specific high value targets, when punitive action, rather than occupation of territory or longer military campaigns is considered politically appropriate. Generally, however, air power is seen as complementary to, and neither subordinate to nor independent of, operations on land and sea. Happily, in the United Kingdom at least, inter-service mistrust and misunderstanding have largely given way to positive and professional appreciation of the interrelationship between air power, diplomatic objectives and other kinds of military force.

Nonetheless, all governments, including that of the USA, are likely to face difficult choices in deciding where defence allocation priorities should lie, if only because it is not possible to identify any one dominating future threat source. Any force provision must be flexible, in that it could be employed in Europe or beyond. It must be capable of, and be seen to be capable of, delivering heavy and precise firepower against a wide range of targets in different environments in a short timescale. As far as possible it must be economical in manpower, not requiring large numbers at constant high states of readiness. Does that litany sound familiar to proponents of air power?

While the USSR no longer presents a threat in the manner of the Cold War, its retention of a powerful air force, larger than any European combination, leaves it with a potential military instrument to support diplomatic pressure, in exactly the same way that the Luftwaffe was given great prominence by Germany before 1939. In 15 years' time several countries beyond Europe could also have developed either aircraft with stand-off weapons or surface-to-surface missiles with the range to reach the UK.

Security of the home base must therefore remain the first priority. That should retain two components: protection and a deterrent capacity to exact unacceptable retribution on an aggressor.

Protection should be afforded by a combination of aircraft and surface-to-air missiles. The former must have the range to intercept aircraft beyond missile launch point and the

capacity to engage escorting fighters. The latter should be able to engage both aircraft and incoming surface-to-surface missiles. Bearing in mind the lead time for the introduction into service of major new systems, development of a new generation of fighters and missiles should not be postponed. The history of the F15, and the potential of European Fighter Aircraft (EFA), suggest that a fighter procured to defend the UK could be equally appropriate for the task of establishing local air supremacy should British ground and naval forces be deployed overseas.

The deterrent posture, complementing an effective defence, requires the retention of both conventional and nuclear offensive capability. Regardless of the future of the UK's SSBN force, dual capable aircraft will have a significant role to discharge. Extended by in-flight refuelling, equipped with stand-off conventional or nuclear weapons, a relatively small force of manned aircraft would be a highly visible military instrument.

Their retention in the UK in peacetime would be a declaration of defensive sufficiency, their deployment overseas in crisis a potential diplomatic signal, their actual conventional contribution to a localised conflict would be formidable. In a world threatened by nuclear proliferation the presence in theatre of dual capable aircraft could also redress a threatening local imbalance and discourage the employment of nuclear weapons in a third world conflict.

After the Falklands Crisis, a requirement for unilateral military action by the UK cannot be ruled out. More likely however is the projection of military force with partners. The partnership could be under the aegis of a European political authority, or the United Nations, or an ad hoc regional security grouping. Such a possibility has two implications for British air power. The first is one of scale. As in the Gulf crisis, British forces would be committed alongside those of other nationalities. Under circumstances already analysed, wherein the United Kingdom was not itself directly threatened, the government would have the freedom to decide the extent of the British contribution, ranging from a token presence to a large-scale deployment.

The second implication concerns the nature and source of air power to be made available for multi-national operations. For example, in the Gulf crisis RAF Tornadoes were refuelled en route to Saudi Arabia by British aircraft. Some support equipment however, was flown in USAF C5 transports. In theatre, reconnaissance and electronic warfare (EW) support was provided by the USAF and French Air Force.

When armed forces are reduced in quantity, not only must quality be sustained, but enhanced by every means of force multiplication. The inherent flexibility of air power is in itself a significant force multiplier, but only if the principle is converted into effective action. In-flight refuelling, reconnaissance, EW, multi-role training and valuable weapon fits are potent force multipliers, but all increase the costs of air power. The prospect of an increased proportion of multi-national operations invites the re-examination of peacetime multi-national operational cooperation.

There are two possible areas for such cooperation: high value roles such as airborne early warning, reconnaissance and EW; and large-scale common user activities such as in-flight refuelling, strategic and tactical transport. In the former case, the example of the NATO AWACs squadron should be studied. In the second the relationship between military transport forces, civilian airlines and reserve forces, within a multi-national framework such as Western European Union should be examined. There are obvious problems to be overcome: procurement source, national individual interests, national variations in training and force structures and by no means least, the principle of national control over valuable military assets in unforeseen contingencies. The alternative however may be an inability to provide for the force multiplication necessary to ensure the operational credibility of greatly reduced air forces.

Preparation for increased multi-national cooperation should be considered in conjunction with the implications of reduced main force readiness requirements. Not only does the ending of the Cold War entail an overall reduction in force levels, it reduces the proportion of the remainder required to be prepared to fly and fight at short notice. This in turn has extensive implications for squadron manning and operational training, although at the cost of breaks with recent practices and tradition.

Suppose for example that Operational Conversion Units (OCUs) were to be disbanded, and ab initio aircrew moved directly from advanced specialist training to squadrons. The training load on senior squadron aircrew would be increased, but there would no longer be extraction by the OCUs to reduce and dilute their numbers and crews would spend longer tours on the front line. In the event of a prolonged future crisis, the squadrons would have time to intensify training programmes and raise everyone's readiness states. In peacetime only a proportion of crews would need to maintain a combat readiness level of standards. They would man composite squadrons which would respond to unforeseen crises such as the Gulf or the Falklands. In this way, while training tasks on the squadrons would increase, the pressure to achieve it would be reduced, there would be a greater proportion of experienced crews to carry the load, and for every ab initio there would remain the incentive of achieving combat ready status. Meanwhile nominated crews would train regularly with their foreign colleagues in the multi-national force. Finally, such a structure would encourage greater flexibility in the employment of auxiliary or reserve aircrew because they would not be expected to sustain the combat readiness of their regular colleagues without concentrated pre-conflict training. Such ideas were not unknown before 1939.

Perhaps however, the greatest challenge to air power in the aftermath of the Cold War may lie in the stimulation of ideas. So much has changed that perennial air power issues, such as those touched on above, must be re-examined no matter how conclusive previous studies may have been. The arguments may be exactly the same, but their relative values will often have changed dramatically. For example, those who point to the ambivalence of the bomber offensive in World War II and deduce that strategic bombing is an obsolete concept have not

stopped to reflect on the significance of the Israeli attack on the Iraqi nuclear installations at Osirak in 1982. Conversely, there may be good operational and political reasons for re-evaluating offensive and defensive counter-air priorities. The greatest force multiplier of all is the power of creative thought. The fewer the available resources, the smaller the force, and the wider the range of the options the greater the need for objective, imaginative and far-sighted appraisals of what air power can and cannot do. The ending of the Cold War offers the first opportunity since 1945 for a reiteration of the fundamental principles of air power accompanied by a re-evaluation of their practical implications in a much wider world. In a period of stringent force reductions the question is not, 'Can we afford to "divert" scarce resources and high quality manpower to further training and broadening?'; but, 'How best can we allocate resources to further training and broadening which are now even more important'?

The ending of the Cold War must extend airmen's vision beyond European skies. If a 747 in 1991 can reach the other side of the world in 18 hours from Heathrow, by 2010 a military threat to the UK could be posed in the same dimension over a similar distance, in the same timescale. Rapid response, flexibility, long reach and concentration of force are not monopolies of British, or friendly air power. It is a truism that air travel has made the world shrink. There seems a reluctance in some quarters to accept that air power is having exactly the same impact on military operations.

The only certainty in forecasting the future of air power is that sooner or later the unpredictable will arise, and a response will be required. Military force will continue to be an arbiter of international disputes. In the foreseeable future, the unpredictable is likely to occur well beyond the confines of east-west confrontation. Air power will have a dominant role here also; at least as important as in the Cold War. If Britain wishes to exercise any influence on the outcome, or remain immune to its consequences, a post-Cold War Royal Air Force must be capable of protecting the home base, of deterring ill-considered hostility and probably within a multi-national framework, of supporting the forces of international order. In retrospect, preparing to cope with 'the threat' may have been a comparatively straightforward exercise.

Article

Purple Air Power: The Future Challenge

By Air Vice-Marshal (Retd) Andrew G B Vallance

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Biography: During his early career Air Vice-Marshal Vallance flew Vulcans and Victors. Subsequently, as Officer Commanding RAF Wyton, he commanded a Wing of four squadrons flying Nimrods, Hawks and Canberras. He has logged 4,000 flying hours. His ground tours included three as a PSO to Air Force Board members. He was appointed Defence Studies (RAF) in 1988, and subsequently served four tours in NATO. He has published 100 articles and three books, mainly on air power doctrine and strategy. Between 2004 and 2017 he was Secretary of the so-called 'D-Notice' Committee, guiding the British media on the public disclosure of sensitive national security information.

Introduction

As we peer into the crystal ball, it seems clear that in the future all major military operations are likely to involve some combination of land, sea and aviation forces,[1] albeit rarely in equal measure. Different strategic and operational situations will demand different force structures, but in every case it will be essential to identify the lead force element so that the other force elements can be used to best effect in its support. Traditionally, armies have always been seen as the lead force element in land operations and navies in maritime operations. Yet in the future, it is increasingly probable that air power will be the military instrument of first choice for governments, not only for waging war, but also for preventing it. Three key factors support this assertion.

Firstly, because set-piece scenarios are disappearing and the geographic span of operations is increasing, the importance of the basic characteristics which distinguish aviation forces is growing. Reinforced by the rapid march of technology, their innate ability to exploit the third dimension, and the consequent reach, speed, flexibility, responsiveness and power of concentration which this confers, offers a spectrum of strategic and operational applications which is well-suited to the diffuse nature of the rapidly evolving strategic environment.

Secondly, and for the developed world in particular, public and politicians alike have become increasingly sensitive to sustaining or inflicting casualties.

This sensitivity can only increase as the number of women in the front line grows. Clearly, aviation forces involve the commitment of far fewer 'front-line troops' than either land or sea forces. And because far fewer people need to be put at risk to achieve the same operational result, the scope for sustaining heavy casualties is inevitably far less. Aviation forces do, of course, have great killing power, but they can also effectively disarm an enemy by cutting off his supplies and destroying his heavy equipment. They can also strike at the heart of an enemy's war-making ability by dislocating war-industries, utilities and transport systems. And thanks to precision-guided munitions and advanced navigational and targeting aids, they can do this with far lower risk of collateral casualties and damage than in previous years. Hence, air power is a humane instrument of force. It can be used to terminate conflicts rapidly and with minimum loss of life to friend and foe alike, a characteristic which has obvious political appeal.

Since the mid-1980s in particular, whilst the overall sizes of the world's armies, navies and marine corps have (in general) fallen, their air arms have expanded – AH-64 Apache

And thirdly, trends in the force structure development show that even armies and navies see their future as lying increasingly in the air. Exercising air power has always been a truly purple (joint or multi-service) activity, and armies and navies are today key contributors to air power capabilities. The United States Army and the United States Navy rank at or near the top (in terms of numbers) of the world's air power league tables.[2] And in both France and Germany, the respective armies have similar numbers of aircraft to the respective air forces. Indeed, since the mid-1980s in particular, whilst the overall sizes of the world's armies, navies and marine corps have (in general) fallen, their air arms have expanded – almost universally in proportional terms, and in many cases also in actual terms. As indicated in the charts following, whilst surface forces have typically been cut between 30% to 60%, many army and navy air arms have actually grown by over 30% (and some by over 60%) during the same period. This process of air arm growth alone tells us that air power – in all its purple forms – is seen by the military as well as the politicians as likely to play a growing role in future crises and conflicts.

Illustrative Comparison of Trends in Army and Navy Force Structure Development Between 1986 and 1997

Service: British Army

Year	Manpower	Tanks – MBT	Aircraft
1986	163,000	1,030	323
1998	113,000	462	227
% Change	-31%	-55%	-14%

Service: German Army

Year	Manpower	Tanks – MBT	Aircraft
1986	335,000	4,662	747
1998	239,950	3,248	626
% Change	-28%	-30%	-16%

Service: French Army

Year	Manpower	Tanks – MBT	Aircraft
1986	300,000	1,602	687
1998	219,900	768	510
% Change	-27%	-52%	-26%

Service: Italian Army

Year	Manpower	Tanks – MBT	Aircraft
1986	270,000	1,770	401
1998	188,300	1,325	336
% Change	-30%	-25%	-16%

Service: Spanish Army

Year	Manpower	Tanks – MBT	Aircraft
1986	230,000	959	56
1998	128,500	776	176
% Change	-44%	-19%	+318%

Service: Swedish Army

Year	Manpower	Tanks – MBT	Aircraft
1986	47,000	870	66
1998	35,100	539	107
% Change	-25%	-38%	+62%

Service: Belgian Army

Year	Manpower	Tanks – MBT	Aircraft
1986	67,200	334	66
1998	30,100	132	88
% Change	-55%	-60%	+33%

Service: Greek Army

Year	Manpower	Tanks – MBT	Aircraft
1986	158,000	1,801	160
1998	116,000	1,735	225
% Change	-27%	-4%	+41%

Service: Turkish Army

Year	Manpower	Tanks – MBT	Aircraft
1986	520,000	2,922	240
1998	525,000	4,205	447
% Change	+1%	+44%	+86%

Service: UK Navy

Year	Manpower	Surface Combatants	Submarines	Aircraft
1986	70,600	60	32	175
1998	48,000	38	14	227
% Change	-32%	-36%	-56%	+30%

Service: US Navy

Year	Manpower	Surface Combatants	Submarines	Aircraft
1986	568,000	214	132	3,820
1998	426,700	144	95	4,250
% Change	-25%	-33%	-28%	+11%

Service: French Navy

Year	Manpower	Surface Combatants	Submarines	Aircraft
1986	67,710	214	18	289
1998	63,300	144	14	221
% Change	-7%	-33%	-13%	-24%

Service: Italian Navy

Year	Manpower	Surface Combatants	Submarines	Aircraft
1986	44,500	31	10	83
1998	44,000	32	8	101
% Change	-1%	+3%	-20%	+22%

Sources: IISS Military Balance, 1985/86 Edition and 1997/98 Edition.

The key motive force behind the rapid rise in the relative importance of air power has been the unrivalled dynamism and pace of aerospace technological development. During the last two decades, parameters such as the range, payload and manoeuvrability of platforms, and the lethality, accuracy and reach of their weapons, have all increased by several orders of magnitude. To these must be added increases in serviceability and survivability which have produced a dramatic growth in sortie rates and surge potential, all of which allows intensive air operations to be sustained for far longer periods than was previously the case. Overlaying all of this has been the great expansion in targeting and surveillance capabilities, defence suppression and penetration aids, improved navigational accuracy and night/all-weather capabilities. The net result of this sustained technological spring, has been the development of air power capabilities which – inter alia – can now hit and destroy almost any target, or reach almost any destination, almost anywhere in the world in almost any weather and light conditions.

Such capabilities are invaluable not merely in high-intensity conventional conflict, but also in lower intensity operations, including those concerned with peace support. Until recently, these latter operations were seen largely as the preserve of surface forces, particularly land forces, as soldiers alone could be used to mount permanent physical presence throughout a crisis region. However, recent experience has highlighted the risks and limitations of such permanent physical presences. To put people on the ground in a crisis region is to risk heavy casualties. Sustaining casualties tends to undermine public support, weaken political resolve and strengthen the pressures for withdrawal. But even the task of extricating large numbers of people and their heavy equipment, from a distant land, in a degenerating crisis, can itself be

very difficult, particularly if the withdrawal is opposed by the local population. All this means that the use of large-scale ground forces in peace support operations carries with it some very serious risks and problems.

We do not need to look far for examples to support this thesis. Somalia, Rwanda and the long agony of Sarajevo all testify to the limited benefits and high risks involved in mounting physical presence 'on the ground'. In Somalia, the ability of local warlords to inflict casualties on US troops ensures that US involvement would soon end. In Bosnia, although UN ground troops did help to protect the humanitarian effort, they could not prevent the blockage of road convoys nor could then defend US-designated safe areas against determined attack. More importantly, the commitment of many thousands of UN troops into Bosnia did nothing to resolve the basic impasse. If anything, it increased the complexity of the problem; for the dangers faced by peacekeeping troops quickly made policy a hostage.

As each new nation contributed peacekeeping forces, so they too became conscious of the vulnerability of their troops and reluctant to endorse calls for decisive action. When attempts were made to take decisive action, the *de facto* hostage became *de jure* hostages as television audiences witnessed the degrading spectacle of UN peacekeeping soldiers chained by their Bosnian Serb captors to strategic targets. The nadir of this process was reached in July 1995 with the fall of Srebrenica, then 'defended' by 309 Dutch soldiers and a handful of British SAS troops. The presence of these troops not only proved to be no protection against determined attack, but it also prevented the effective use of air action, perhaps the only means by which the town could have been saved. At Srebrenica, the political imperative of avoiding casualties amongst peacekeeping troops led to tragedy.[3]

Only when NATO and the UN agreed to an air campaign was it possible to cut this Gordian Knot. Significantly, it was the United States (a country which had decided not to commit ground troops) which took the lead in pressing for air action. That air campaign (Operation Decisive Force, 30 August-14 September 1995), assisted by some artillery action (most notably from Mount Igman within the close confines of Sarajevo and its environs) unlocked the Bosnian impasse. It offered the Bosnian-Croat and then the Bosniac armies their first opportunity to engage the Bosnian Serbs on more-than-equal terms and set the scene for the Dayton Peace Accord. Decisive Force combat operations took only 15 days and involved 3,515 sorties, of which 1,045 were support sorties flown outside the combat area. Some 338 individual targets were struck within 48 target complexes.[4] Only one French Mirage 2000 aircraft was lost, and its two-man crew (though captured) were subsequently liberated. In comparison, during the previous five years, the UN Protection/Peace Force sustained 1,690 casualties from all causes, including 214 killed; of these, some 708 casualties (including 80 killed) were caused by hostile action.

During Operation Decisive Force only one French Mirage 2000 was lost, and its two-man crew (though captured) were subsequently liberated

Bosnia was a watershed in the use of air power for peace support, just as Desert Storm was a watershed in high-intensity operations. Both showed that air power could be used as the lead element in a major Joint Force campaign. But – like the Gulf War watershed – the Bosnia watershed was only a manifestation of trends which had long been in motion and which – sooner or later – would inevitably have emerged. British experience with 'Air Control' in the 1920s, 1930s and 1940s and French experience in Africa in the 1960s and 1970s, both pointed to the advantages of using air power in peace support operations, albeit in relatively straightforward operational and political environments. Advances in technology and technique over the last 20 years allowed air action to be similarly effective in the far more difficult operational and political conditions of Bosnia. To be sure, air power will not always be a practical option: geography, cover, terrain, force-to-space ratios, density of population etc may well – on occasion – militate against its use. But the historical trend is unmistakable. Aviation forces are quick and easy to insert and extract, involve less human and material (and therefore political) commitment, and thus offer few potential liabilities in a crisis. For these reasons, it seems unavoidable that air power will be required to play an increasing part, not only in future conflicts, but also in crisis management and peace support situations.

Much then is likely to be asked of air power in the years ahead, and perhaps the key challenge facing airmen is to ensure that the doctrines which guide air power employment are sound and allow the full capabilities of aviation forces to be exploited. And here again three specific dimensions would seem to hold the key.

Firstly, there is the dimension of technology. It has long been recognised that the interaction between doctrine and technology in aviation forces is far more marked than that in land or sea forces. Doctrine sets out how forces can best be developed and employed, whereas technology determines the extent to which such aspirations can be realised. In the early years of air power, doctrines were based too much on theory and too little on practical experience. They were far ahead of the technology needed to realise them and, thus, often proved invalid when put to the litmus test of war. Today, that problem is increasingly being turned on its head. Rapid developments in aerospace technology now offer a range of options truly vast in their scale and scope. A glittering jeweller's tray of possibilities lies before air power planners, but with ever-tightening purse strings. It will be more difficult than ever to choose between the different options on offer.

In large part, such choices must be steered by the second key dimension: that of strategy. As capabilities have expanded, strategic options have increased. Prominent (and fashionable) amongst these at present is that of Information Warfare.[5] Information Warfare is designed to reduce the enemy's ability to make timely and well-informed decisions by minimising his information flow, while ensuring that the speed, quality and quantity of the friendly information flow is preserved. At the root of this is Colonel John Boyd's 'OODA loop' concept, in which the speed of the decision cycle of Observation-Orientation-Decision-Action is enhanced for friendly forces and eroded for the enemy. Like a chess player who prevents his opponent from seeing all of the board and who makes three moves to every opposing move, the information warrior seeks to out-think and out-pace his enemy.

But Information Warfare is by no means restricted to those who enjoy the benefits of high technology; indeed, it is likely to have a special appeal to those who are unable to compete in the weapon technology race. Such people may seek to nullify the advantages of advanced weapon systems and exploit any perceived over-reliance on them; and they may well choose to do this with unconventional means. So the potential opportunities offered by Information Warfare have to be linked to the parallel challenges of coping with enemy initiatives in this field. Information warfare is unlikely to prove a stand-alone strategic option, particularly, when crisis degenerates into conflict. As with electronic warfare, it is essentially a supporting strategy; its role is to supplement rather than to displace force-employment strategies.

Current debate in that latter field centres on whether air power would best be used in 'Parallel Operations' or 'Asymmetric Operations'. Parallel Operations – the brainchild of Colonels John Warden and David Deptula – strike at an enemy state's ability to wage war. Their object is to destroy a horizontal cross-section of key targets set on a scale which would overwhelm the enemy's resources and resilience and thus cause his state to collapse. In contrast, Asymmetric Operations focus on using growing asymmetries in the capabilities of aviation forces and those of the surface forces to destroy the enemy army and navy. Both of these strategic concepts seek to exploit developments in sortie generation, precision, surveillance

and targeting, and each draws a measure of validity from the success of different phases of Operation Desert Storm. The essential prerequisite for each strategy is obviously to achieve air superiority; the essential difference between them is how best to exploit that superiority once it has been won.

There are of course echoes from yesteryear in both strategies. Parallel Operations are essentially Douhetist in approach. However, they specifically seek to avoid the very high level of collateral damage and civilian casualties which Douhet saw as inevitable and indeed essential. Asymmetric Operations are a development of World War II 'tactical air force' concepts, although with the role reversed between aviation and surface forces. Each of these air strategies has its own problems, not the least of which is achieving widespread credibility. Advocacy of parallel operations continues to be burdened by previous failures to realise Douhet's prophecies, the problems with 'panacea targeting' during World War II and the limited effectiveness of strategic bombing in the Vietnam War. In contrast, the promotion of Asymmetric Operations has to overcome the intellectual baggage produced by millennia of land and sea warfare in which only armies could defeat armies and navies could defeat navies. It seems probable that Parallel Operations and Asymmetric Operations may well be more complementary than competing in their respective natures. Which of the two prove to be most effective is likely to vary from situation to situation. And in some (or most?) situations a combination of the two may well produce the best results (as indeed it did in the Gulf War).

But whatever the choice of strategic direction and doctrinal guidance, each and all are likely to be underpinned by the third key dimension: organisation. At the core, this issue is likely to revolve around how unity of air action can be promoted.

As that distinguished airman Marshal of the Royal Air Force the Lord Tedder pointed out, 'The old fable of the bundle of faggots compared with individual sticks is abundantly clear. Its strength lies in unity'.[6] Indeed, unity of development and employment, and unified control at the highest practical level, have always been fundamental to air power effectiveness.

The reasons for this are not hard to discern. The air is observably a distinct and indivisible environment; it cannot be compartmentalised, and what happens in one part of the airspace has inevitable and rapid consequences for what happens in the rest. The more capable air power systems become, the greater the importance of ensuring they are controlled as a unified entity from the highest practicable level. Highly capable systems such as fighter bombers are advanced and helicopters now have multi-role capabilities and theatre-wide applications. These key assets need to be at the direct disposal of the overall Joint Theatre Commander so that they can be tasked to meet theatre-wide priorities.

Highly capable systems such as fighter bombers and advanced attack helicopters now have multi-role capabilities and theatre-wide applications – USAF F-15 Es

Two issues are involved in this complex and emotive area; ownership (ie which service operates which aircraft) and command and control. In theory, which service owns which system is not an operational issue, providing that command and control arrangements ensure integrated and unified action. But in practice, dividing aviation forces between several services inevitably complicates operational C^2 arrangements and often leads to 'turf disputes' which erode (sometimes seriously) operational effectiveness. In his book, *It Doesn't Take a Hero*, General H Norman Schwarzkopf of Desert Storm fame describes an incident during the 1983 US invasion of Grenada, when he had to threaten a US Marine Corps Colonel with court martial before the Colonel agreed to task Marine Corps helicopters to carry US Army troops.[7] As the distinguished British Soldier Field Marshal The Viscount Slim emphatically stated, 'Private armies … [like] private air forces, are expensive, wasteful and unnecessary'.[8] And the fundamental difficulty in dividing aviation forces between different armed services is that it does tend to lead to private air forces.

Today, air power assets in most countries are divided between several different services. To meet campaign needs, air power command and control has to be organised partly to overcome the difficulties which arise from that organisational division. In the future, such a division could be avoided, and command and control be simplified, if all air power assets were unified within a single air organisation. Clearly, land and sea force commanders are likely to

be concerned about losing direct control of air power assets presently under their command and thus available for their use as and when required. However, such compartmentalisation, and the wastefulness which is its inevitable concomitant, is a luxury which no Joint Theatre Commander can afford; he must be able to deploy such key assets according to his own priorities, and they may not always be the same as those of some of his subordinates.
But setting aside the operational arguments for creating a unified air organisation, the economic advantages in favour of such a step are compelling. Only the very biggest of nations can afford the luxury of maintaining separate training, maintenance, repair and logistic organisations for three or four different air arms. And even the very biggest nation should be reluctant to sacrifice the economies and benefits which such unification would bring. In all cases, efficient administration demands that air power supporting capabilities are unified; this is a process which is already underway in Great Britain and other states.
And the unification of air power support elements, when combined with the unified control of air power operational elements, represent the key steps along the road which should lead to the unification of all air power assets within a single air organisation. Given the great and growing importance of the air power contribution, undertaking that journey and reaching that eventual destination may well prove to be the key defence challenge of the age.

Notes

[1] I use the term 'Aviation Forces' to denote not merely established national Air Forces but also the air arms of Navies, Armies and (where appropriate) Marine Corps.
[2] Numbers (excluding those in storage) vary surprisingly from year to year. The most recent authoritative single-source figures for aircraft held by the largest air forces (air arms: US Air Force, 6470; US Navy/Marine Corps, 4250; Chinese Air Force, 4033 (+ Trg ac); Russian Air Force, 3710; Russian Air Defence Force, 3715). Source: IISS, Military Balance 1997/98 (OUP, Oxford, 1997).
[3] See articles in *The Guardian*, *The Daily Telegraph* and *The Independent* UK newspapers, 11 July 1996.
[4] Allied Forces Southern Europe Fact Sheet 'Operation Decisive Force' dated 6 November 1995.
[5] Also known as Command and Control Warfare, amongst other names.
[6] Tedder, Marshal of the Royal Air Force, the Lord, *Air Power in War*, HMS P45, 1948.
[7] Schwarzkopf, General H Norman, *It Doesn't Take a Hero*, p. 254, Bantam Press, London, 1992.
[8] Slim, Field Marshal The Viscount, *Defeat Into Victory*, Corgi Press, p. 465, 1971.

Article

Air Power – Past, Present and Future

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Biography: Air Commodore Andrew Lambert is a military historian, who has published numerous works on defence issues since earning his MPhil from the University of Cambridge. Air Commodore Lambert's extensive military career included flying Phantoms, running the Phantom Force's QWI school, acting as a planner in Gulf War I, then as Director of Defence Studies, and commanding in the Falkland Islands, Norway, Bosnia and over Iraq.

Introduction

Air is a curious medium; some Ancient Greek philosophers wondered if it had any substance at all. A hand moved through the air encounters little resistance yet as one accelerates the air becomes increasingly viscous, with some aircraft designers describing high speed flight as forcing a path through soggy concrete. Even so, and even at their slowest speeds, aircraft still travel faster than the fastest of ordinary vehicles or ships.

70% of our planet is covered by water and 30% by land, but all of it is covered by air. On the surface of this planet everywhere is accessible from the air, and those who seek to hide must either go below the surface, hide in the undergrowth or conceal themselves amongst other things such as hospitals, mosques or crowds.

70% of our planet is covered by water and 30% by land, but all of it is covered by air

Use of the air medium to provide stand-off range was well appreciated by the Pharaohs. The ability to move across the battlefield at 30mph firing scores of flighted arrows at infantry who had no means of reply was a war-winner, recorded on several Ancient Egyptian murals. How Pharaohs must have wished that they themselves had wings.

Despite man's clear yearnings to fly, it is curious that when powered flight did finally occur and began to be used, the Establishment, and particularly the existing military Services, tended to regard it as a parvenu, a thing of little substance, interesting maybe, but of little use and certainly no substitute for the 'real' forms of war on the battlefield or high seas. According to these 'experts' warfare from the skies was variously 'immoral', 'ineffective' or 'needed to be controlled by the older Services' where it could be given its proper (rather lower) priority. That air power confounded the sceptics is a remarkable story, and one worth repeating. Probably such arguments will be incomprehensible to future generations who will think them quaint, being unable to recall a time before i-Pads, computer viruses and cyber warfare, before space stations and instant communications, before global air travel, before missiles, and before bombs precisely hit their designated targets. For these generations such technology will be 'old hat'; of more interest will be cybernetics, Artificial Intelligence and the how and why of culture, competition and conflict.

But the story of the air weapon through the 20th and early 21st Centuries is fascinating, especially seen in the context of the evolution of warfare as a whole. As the great land armies of Ancient Persia, Rome, Mongolia and even Napoleonic France, were slowly outflanked by

the maritime power of the Ottomans, Spain, Britain and eventually the USA, so in their turn these older forms of warfare were and are being materially changed if not supplanted by the new warfare, that from the skies. And those nations that fully exploit this medium, the new 'Airpowers', now rely on the air and space for the success of their economies; rely for their influence on rapid and frequent global travel, and in place of 19th Century 'gunboat' diplomacy now lead with 'air diplomacy'. That certain air operations have gone very well, while others have faltered, is the theme of this paper, and in doing so it offers thoughts for those who might use it in the future.

First Flight

Perhaps man's first *faithful* attempt to fly was Brother Eilmer who, just before the Norman conquest, and perhaps hoping to imitate the mythical Daedalus, draped himself with a cloak wrapped around a wing-like frame, and then launched himself off the tower at Malmesbury Abbey. In what was probably a series of uncontrolled stalls and recoveries, he managed, so the story has it, to fly over the city wall, over the nearby river, and on to the marshy ground over a furlong beyond. That he suffered two broken legs on landing perhaps gave rise to the maxim that 'a good landing is one you can walk away from'!

Of course the accolade for the first successful controlled flight goes to the Wright brothers who, as bicycle manufacturers, understood that banking an aircraft was not something to be avoided, it was actually the means by which an aircraft is turned. In 1903, after an exhaustive series of experiments, they achieved controlled flight for the first time.

What is truly remarkable is that from that point the very nature of civilised life changed. Within eight years man was using the aircraft for warfare - Libya in 1911. By 1914 airborne 'spotters' had enabled artillery to fire at targets the gunners could not see; by 1915 the first strategic air attacks had occurred, and by 1918 the world's first independent air force had formed. In the autumn of that same year aircraft had, almost by themselves, caused the rout of two separate Turkish corps, the VII and VIIIth, at Wadi Ziemer and Wadi el Fara.

Within 20 years of that 1903 flight, Brigadier General Billy Mitchell had destroyed the German heavy cruiser *Ostfriesland* from the air, thereby heralding the fate of the battleship. Within 35 years, scheduled air services began operating across the Atlantic, and to South Africa or Australia. Trips that would have taken months by sea were now taking just a few days, if not hours.

World War II

The offensives of WWII began with that devastating onslaught of the combined thrust of tanks and aircraft in what became known as the Blitzkrieg. Against such concentrated might the Allies had no effective defence. In 1940 the Battle of Britain, fought entirely in the air, inflicted the first defeat on the Nazis. In 1945 the first atomic bombs were delivered from the air bringing the war to a peremptory close, thereby almost certainly saving the lives of at least a million allied soldiers. At the same time the technology of flight was being put to new uses with Germany developing a range of 'Vergeltungswaffen', Reprisal or V-Weapons. These rockets, of increasing complexity, enabled a man in 1969 to step foot on another body of the solar system, just 66 years after the Wright Brothers' first hesitant hops at Kittyhawk.

But progress in the air was not unalloyed success. German attempts to destroy the morale of the British civilian population failed to persuade sufficient that surrender was better than fighting on. In turn, the Allied Strategic Bomber offensive was so inaccurate that, as one analyst calculated, to guarantee one hit on an area the size of a football pitch would require no less than 3,000 bombers. Moreover, the scale of civilian casualties from each of the bombing campaigns was later considered immoral, and disproportionate to the gains made.

'Oh, Mr Butterfield, Mr Fitzsimmonds would like to see you in his office at once'
David Langdon, *Punch,* 12 February 1941

That said, against the Wehrmacht in the field the weight of air attacks proved devastating. On D-Day alone the Allies flew almost 14,000 attack missions across the beachheads, while the Luftwaffe flew just 750 across the whole of Europe, and most of those German flights were dedicated to defending the homeland. Although German soldiers continued to fight hard the incessant call was 'Wo ist die Luftwaffe?', and even Field Marshal Erwin Rommel, with personal experience of the power of enemy air in the Desert War, made the point agreed by most German generals that '...anyone who has to fight, even with the most modern weapons, against an enemy in complete control of the air, fights like a savage against modern European troops, under the same handicap, and with the same chance of success'. And this has the ring of truth to it; Rommel even wrote to his wife, 'The enemy's air superiority has a very grave effect on our movements. There's simply no answer to it.' It is ironic that he himself was badly wounded soon after when his staff car was strafed by Canadian fighter aircraft.

> '…. The enemy's air superiority has a very grave effect on our movements. There's simply no answer to it'. – Rommel

But if the Allied Strategic Bombing campaign failed to destroy the morale of the German people, it certainly did much to destroy the German war economy. As Hitler's armaments minister, Albert Speer, said after the devastating fire storm inflicted on Hamburg, 'Four more Hamburgs and Germany will be out of the war….' I reported for the first time orally to the Fuehrer that if these aerial attacks continued, a rapid end of the war might be the consequence'.[1] Without doubt, as the United States Strategic Bombing survey revealed, Allied bombing crippled German munitions production, effectively bringing it to a standstill from January 1945, some five months before the surrender. From that moment on, it was only a question of time.

The Cold War Era

> 'From Stettin in the Baltic to Trieste in the Adriatic an 'Iron Curtain' has descended across the continent.'

Facing each other across Churchill's 'Iron Curtain', the victorious WWII allies soon found themselves at odds. In September 1947 the USAF was formed, recognising the successes of the Allied Air offensive in WWII, the need to deter the Soviets from aggression, and the potency of the strategic air force now rapidly equipping with intercontinental bombers and strategic nuclear weapons.

In 1948 the Soviets attempted to blockade Berlin by cutting off all road and rail links to the beleaguered city. In a feat of resolve that can only be marvelled at today, the Western Allies committed themselves to supplying Berlin entirely from the air. The 2½ million West Berliners received 277,000 flights during the year, delivering some 2.3 million tons at an average of 5,000 tons/day. Allied transport aircraft, protected by waves of fighters, were landing in Berlin every three minutes. Distribution of all the stores in the city was a civilian responsibility to which Berliners became fully committed; the record for the offloading of ten tons of coal, for example, was just ten minutes. The Soviets finally called a halt to the siege when they realised that air deliveries actually exceeded pre-airlift rail deliveries, and that further blockade was therefore pointless. Such Allied commitment gave heart to the defeated Germans, drew the Allies ever closer together, and directly facilitated the formation of NATO, the bedrock of Western Defence Policy ever since.

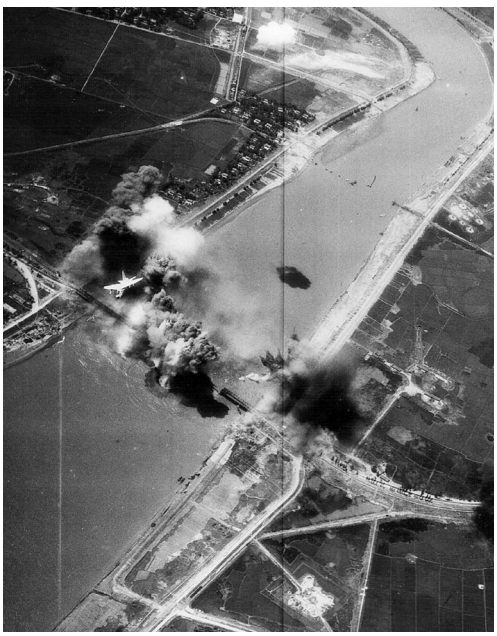
In the two principal wars that followed, Korea and Vietnam, the potency of air power seemed less assured. In both theatres the strategic unassailability of China, and the desire to keep the fight sub-nuclear, meant that neither campaign could interdict the Communist factories or Lines of Communication (LOCs) in or from China's heartland, so that all operations were limited to local, tactical events. Nevertheless, in Korea Air Forces substituted for ground forces to a considerable extent with the UN armies outnumbered almost 2:1. Helicopters were used in large numbers for the first time, providing considerable tactical mobility, and with UN fixed wing aircraft scoring kill rates of 10:1, allied air superiority effectively prevented the Communists from deploying military forces except at night.

Sadly, the successes of WWII and even Korea were not repeated in Vietnam. Equipped with modern fast jets with impressive bomb loads, it seemed as if the Western air forces would be easy victors. However, over emphasis on nuclear operations, over assessment of the potency of aircraft armed with conventional unguided bombs, the multiplicity of differing Command and Control centres, the veto on striking strategic centres in China, the invulnerability of LOCs reliant only on muddy paths through the jungles, the potency of Soviet air defences, and intense political interference, all conspired to reduce air power's anticipated impact. President Lyndon B Johnson (LBJ), applying his own moral compass and logical reasoning to his enemy, imposed frequent bombing pauses in the mistaken belief that he was signalling to Hanoi. In the event, all he signalled was his own hesitancy, indecisiveness and lack of moral resolve. Hanoi regarded his bombing pauses as signs of weakness, all the while portraying the US as bloodthirsty imperialists.

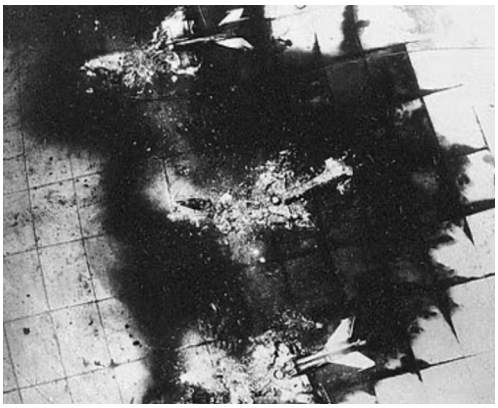
'No one bombs an outhouse [in Vietnam] without my approval' – Lyndon B Johnson

However, in March 1972, the nature of the war changed when some 30,000 North Vietnamese troops crossed the De-Militarized Zone (DMZ) in the Easter Offensive. Under the Nixon Administration the gloves were now off, especially as the North Vietnamese regular army would need a far larger resupply train than Vietcong irregulars. Operation Linebacker I was ordered. Virtually all military targets north of the DMZ were attacked, and the mining of Haiphong harbour was authorised. The first use of Laser Guided Bombs (LGBs) achieved spectacular results with bridges that had been all but impossible to destroy using unguided bombs, now falling at the first stroke. As a direct result, Hanoi became far more reasonable in the Peace Talks. However, as soon as *Linebacker* ceased, Hanoi began stalling again. In December the same year the talks collapsed entirely when Hanoi withdrew. *Linebacker II* was ordered, targeted against the regime and its people, with a succession of 100-aircraft B-52 raids at targets in and around Hanoi and Haiphong. The aim was to cause maximum distress but few casualties.

Civilian and military leaders cannot resist micromanaging Airpower, precisely because it is so Flexible. – Col. Phillip Meilinger



After 10 days, North Vietnam had no Surface to Air Missiles (SAMs) left, no MiGs rose to meet the bombers, and there was virtually no Anti-Aircraft Artillery (AAA). B-52 losses had been sizeable, approx. 3-5%, but within the month (Jan 1973) Hanoi signed the peace accord.



Meanwhile, during the same era, the Israelis had scored some notable air successes as well. In the 1967 'Six-Day War', the Israeli Air Force achieved total air superiority from day one by means of a pre-emptive air attack on Arab air forces, carried out whilst Arab pilots were having their breakfast! The destruction of virtually all their aircraft on the ground meant that the Arabs were powerless to stop Israeli jets from ranging across the battlefield with impunity. Under constant air support the Israeli army achieved something of a blitzkrieg success, with large slices of Palestine and Sinai falling rapidly. Sadly, for Israel, this success was not repeated in 1973 when a surprise pan-Arab offensive was planned for the start of Yom Kippur, a period when most Israelis were traditionally on holiday. Now the boot was on the other foot, and the Israeli Air Force found themselves having to dogfight to achieve any measure of air control; worse, the retreating Israeli ground forces demanded considerable air cover to protect them against the onslaught. Although the Israelis still retained the edge in air combat, the presence of considerable Soviet air defences, especially the new SA-6 SAM, caused severe and unsustainable Israeli air losses. A significant American resupply was ordered, with 56 F-4 Phantom jets deploying directly from Continental USA, already in their war fit. On landing in Israel these aircraft were refuelled and ordered straight into the fight. The tide slowly turned and over the next few days Israel took the fight to the enemy, eventually crossing the Suez Canal into Egypt. The conflict had lasted just 19 days, and although only 26% of the US aid was sent by air, none of the 74% sent by sea arrived before the fighting had stopped. And without that airlift of more than 27,000 tons of tanks, artillery and ammunition, not to mention the 56 ready-to-fight combat aircraft, Israel could well have succumbed.

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Of interest, particularly to British readers, are the air aspects of the Falklands conflict of 1982. The Black Buck bombing missions over 6,800nm were the longest then seen, and involved two Vulcan bombers (a primary and a spare) and eleven Victor Tankers. Whilst damage to the airfield at Stanley was relatively light, the attacks persuaded the Junta to retain 2 Mirage squadrons for the defence of Buenos Aires and gave notice that forward deployment of

fast-jets to Stanley airfield would not be practicable. Even so, and despite the distance from Argentina, air power powerfully demonstrated its effectiveness against surface warships in Falkland Sound. Just ninety relatively unsophisticated Argentine attack aircraft damaged or sank seven major modern NATO warships; hit and damaged nine others, leaving just seven undamaged. According to Argentina, a further ten bombs hit their ship targets but failed to explode. Had these fused, the effect could have been devastating. Although Sea Harriers on visual combat air patrols managed to shoot down some 19 Argentine aircraft, the lack of any effective Airborne Early Warning (AEW) was almost catastrophic for the Task Force. The lesson was clear – naval forces without effective air cover would be sitting ducks.

Gulf War Era

Gulf War I

The first Gulf War, beginning with Saddam's invasion and occupation of Kuwait in 1990, has been described as the 'apotheosis' of air power. Bringing together NATO forces trained during the height of the Cold War, with 4th generation aircraft armed with precision ordinance, new stealthy aircraft such as the F-117A, and all orchestrated in a highly demoralising psychological campaign, the Coalition was able to inflict a decisive defeat on Iraq, the World's 4th largest army and 6th largest air force. During the six weeks' precursor air campaign, the Coalition completely devastated Iraq's combat capability. It destroyed Iraq's Command and Control, with the result that Saddam lost almost all contact with his forces in Kuwait - and was forced to exercise his command for at least part of the time from a Winnebago SUV! Within a few days the Coalition had achieved such Air Supremacy that F-15s patrolled the skies over Baghdad at will, and shot down any Iraqi aircraft that attempted to take off. By then most had already fled to their erstwhile enemy, Iran! The precursor air campaign destroyed 35% of Saddam's tanks, 31% of his other armour, and 44% of his artillery. All front line forces were by then at or below 50% of their fighting strength.[2] In a period when the computer game *Space Invaders* had just come out, F-111s carried out nightly attacks on individual tanks using laser guided weapons, an activity that became known euphemistically as 'tank plinking' - Iraqis found that their tanks seemed to

'We have already informed you of our promise to bomb the 16th Infantry Division. We kept our promise and bombed them yesterday. Beware. We will repeat this bombing tomorrow…. Now the choice is yours. Either stay and face death or accept the invitation of the Joint Forces to protect your lives.'

just blow up in the middle of the night. As one prisoner said ruefully, 'In the Iran/Iraq war the tank was my friend; in the Gulf war it was my enemy'.[3]

In addition, Iraqi forces were subjected to a radio, loudspeaker and leaflet campaign that told them when to expect air attack, with the result that, though fewer than 10,000 out of the 545,000 Iraqi soldiers in theatre were killed, some 87,000 surrendered at the first opportunity and as many as 150,000 left their posts and deserted, just to escape the bombing. Many Iraqi prisoners reported considering suicide rather than face another air attack.

Modern Western air power had unarguably established its credibility as a powerful, if not invincible, weapon of war. Two aspects did, however, give cause for future concern. The first was Iraq's indiscriminate use of SCUD surface-to-surface missiles in attacks designed specifically to kill civilians, especially in Israel. The second was the increasing Western political sensitivity to civilian casualties. This stemmed largely from an air attack on the Al Firdos military bunker which, unbeknown to the allies, was also being used as a shelter for politicians' and military families. Civilian casualties were now firmly an asymmetric factor in war: easy and increasingly lucrative targets for extremists, but as unqualified constraints for future Western military operations.

With the fall of the Berlin Wall in 1989, the collapse of the Soviet Union, and the demonstration of Allied (mostly US) might in the Gulf, many believed a period of international stability would prevail. However, without the dead hand of the USSR, nationalism and religious fundamentalism were soon on the rise and divisions that had been dormant for decades re-emerged. Iran and several Arab nations flexed their muscles, the Balkans regressed to petty squabbles, and China began to assert herself. In such localised disputes one might have thought the emphasis would be on land operations, with air in supporting roles only. In fact, sensitivity over casualties, a reluctance to commit 'boots on the ground' and a desire to reduce costs meant air power found itself very much centre stage.

Balkans

In Bosnia, in answer to the ethnic cleansing being carried out by all sides, the UN established a No-Fly Zone (NFZ), with NATO as the provider of assets. Lack of political consensus rendered this NFZ entirely ineffectual: apart from reading a litany of warnings to errant troop-carrying helicopters, patrolling fighters had no authorisation to use any force. The result was that NATO aircraft flew idly overhead not only when Dutch troops were threatened, but also when massacres of thousands of civilians took place at Srebrenica, Zepa and Gorazde. Serbia just ignored the mighty air presence and concentrated on attacking defenceless civilians, terrorising the rest and exploiting media-inspired Western sensitivities. The situation was eventually brought to a close in 1995 when the US (and other allies), carried out Operation Deliberate Force. This, an intense air offensive targeted against Serbian forces, brought President Milosevic to the negotiating table and compelled him to sign the Dayton Accords. With the Accord signed, there was 'some hope' that peace would take hold!

Since the 1389 'Battle of the Blackbirds' Kosovo has held a special significance for Serbia where it ruled its largely Albanian population with a rod of iron. Confronted with a growing insurgency by the Kosovo Liberation Army (KLA), Milosevic grasped the opportunity to expel native Kosovars. Four years after Dayton, and still doubting Western resolve, he began a vicious campaign against the KLA in the belief that Russia would intervene on his side. Some 230,000 Kosovars were evicted from their homes and the outrages that followed appeared nightly on Western TVs, demanding a Western response. Although Madeleine Albright, the US Secretary of State, thought that a swift air shock would return Milosevic to the negotiating table, the air campaign dragged on for some three months, involved 1,000 aircraft, and required some 38,000 combat missions to convince Serbia that such outrages could not continue. The lesson was clear: against those fully committed to their cause, an air coercion campaign cannot be done on the cheap, and is unlikely to be accomplished by a short sharp shock.

But the Kosovo air war also highlighted a number of other features, principally over the politics of war. In the first instance, wishful thinking that Milosevic would fold after just 48 hours revealed the lack of international consensus over what to do next. As NATO had to go back to the drawing board a number of questions arose. At the military level, was air power to destroy the Serbian forces in the field thereby preventing further ethnic cleansing, or was the aim to coerce Milosevic directly by inflicting costs, specifically through the destruction of key infrastructure targets inside Serbia - especially those owned by his friends? And at the political level, could air power be used decisively, or could political consensus only be maintained by a more gradualist approach? Would targets be selected and prioritised for their military or coercive effect, or would they be selected only if all agreed – 'the horse designed by committee' approach? And, finally, would the West countenance land force operations or would a possible long-term commitment and the concomitant risk of casualties rule this out? Given air power's obvious military effectiveness, these politico-military issues now came to the fore.

However, with President Clinton's stated reluctance to commit ground troops, the likelihood of invasion was very low, and this presented Milosevic with an easy option. Ride out the storm, accept the costs and, as civilian casualties mounted and little seemed to be achieved, just wait for NATO to collapse in squabbles and infighting. On the ground, a parallel option was available to the Serbian army: come out and fight - making them a lucrative air target, but only required if NATO invaded, - or hide and endure, in which case, amongst the mountains and forests, NATO would have to spend days and many missions searching, perhaps with few successful attacks.

In parallel, this campaign demonstrated the bizarre impact of disparate pressure groups on a modern military campaign. The entire conflict was carried out in the full glare of the Media spotlight, with TV reporters seemingly everywhere, and with the new phenomenon

'… zero non-combatant casualties became not only the goal of strategy but also the international expectation'

of social media such as smart phones, tweets and instant communications from theatre. 'Battle Damage Reports' were offered to the general public and politicians even before they became available to military analysts. National politicians were thereby under continuous scrutiny, often invited by public and media alike to adopt positions they might afterwards regret, and all this was reflected in the disparate attitudes to targeting. As one analyst reported '… zero non-combatant casualties became not only the goal of strategy but also the international expectation', as well.[4]

At the end of the first month, after a period of considerable incoherence in the overall campaign, Milosevic must have been convinced that he could ride out the NATO attacks as the campaign seemed to be heading for a repeat of Operation Rolling Thunder, the air campaign over Vietnam. If LBJ's bomb-pause-bomb strategy was taken as a sign of weakness by Hanoi, the sheer cacophony of the NATO nations must have seemed a sure pointer that the campaign would soon collapse.

Fortunately, nations finally realised that what was at stake was not merely the fate of Kosovars, but actually that of NATO itself, and they began to co-operate, with a number of parallel coercive pressures being brought to bear. First was the realisation, spelled out to Milosevic by Martti Ahtisaari and Viktor Chernomyrdin, that Russia would not (and could not) intervene and that he and Serbia were alone; second was his indictment by the Yugoslav War Crimes Tribunal in the Hague for alleged war crimes; third was the possibility, increasingly advanced by a number of European nations, that NATO would be forced to invade; and finally, and probably the most persuasive, was the realisation that there was no chance that NATO would collapse in squabbles, and that the costly bombing campaign would continue until the battle was finally won.

Despite the fractious nature of the Alliance, the military frustration with political whimsy and interference, and the lack of any clear direction, it is remarkable that air power still managed to play such a decisive role in persuading Serbia to capitulate. Of course, there had been errors, such as the bombing of the Chinese Embassy because of incorrect intelligence, and the unintended destruction of a train which appeared unexpectedly on the Grdelica bridge just 1 sec before missile impact, but according to Lieutenant General Michael Short, 'collateral damage drove us to an extraordinary degree...[and] committed hours of [my] day dealing with the allies on issues of collateral damage.'[5] These and other errors underscored the vital role of accurate intelligence in a modern air campaign, and all driven home and accentuated by the West's extreme sensitivity to civilian casualties.

> '… collateral damage drove us to an extraordinary degree... [and] committed hours of [my] day dealing with the allies on issues of collateral damage.'
>
> Lt Gen Mike Short

The lessons which analysts have drawn include: the need for agreement, if not consensus, amongst a coalition; the need for clear political direction specifying the effects desired; and a need for a clear military focus, be it the destruction of the military or the coercion of a leadership. Of course, the military is the servant of politics, and it is well said that 'War is politics by other means', but bad politics make bad war, and directionless politics likely spell defeat.

Modern Era

9/11 and the Aftermath

The Strategic impact of air attack is nowhere more vividly illustrated than by the iconic pictures of 9/11. For the first time the potency of air attack had been exploited by an elusive group of unsophisticated extremists, intent on changing the global landscape through the discomfiture of the most powerful nation on earth. Al Qaeda clearly had little argument with the individuals who died in the World Trade Center; Osama bin Laden's real (psycho-political) target was the people of the USA, and their President. It was a coercive strategy writ large and although the stated aim of this coercion (the removal of infidels from the Holy Places) has yet to be achieved, the attack achieved international notoriety and sparked a whole spate of subsequent intervention operations. These, Osama no doubt hoped, would cripple Arab-American relations, with the ultimate intention of achieving a pan-Islamic Ummah, a world of Islam.

Although nations have adopted stringent security policies for preventing further similar outrages, terrorists clearly realised the potential for mischief from using an air weapon so symbolically.

Afghanistan

The immediate reaction to 9/11 was to demand the handover of Osama bin Laden and when that was refused to attack Al Qaeda in its heartland, Afghanistan. This attack, combined with the subsequent invasion suggested a number of new options for air power in the modern era.

First was the use of air power as the striking force for local militia. Special Forces (SF) and Air Force Combat Control Teams, integrated fully with the Northern Alliance, directed precision air attacks from aircraft circling overhead. The Taleban had no counter to such attacks and for the

most part retreated or just melted away. Cities were abandoned; the Taleban government retreated to the mountains of Bora Bora, and it seemed the conflict was over.

MSgt Bart Decker from the 23rd STS, on horseback in the Balkh valley, during the initial days of the U.S. invasion of Afghanistan in 2001.

However, in an effort to 'win hearts and minds' and to train a new Afghan National Army, considerable Western ground forces were deployed into theatre. With aircraft numbers reduced for the impending invasion of Iraq, aircraft could only be used in localised support, defending small remote garrisons and in providing tactical Air Transport (AT) and Casualty Evacuation (CASEVAC). Though individually effective, air operations lacked the pervasiveness necessary to convince insurgents that there really was nowhere to hide. –For a period, just the presence of western fighters deterred attacks, but force reductions and toothless air demonstrations meant that many beleaguered garrisons soon found themselves under attack and had to fight it out.

The psychological dominance achieved during the invasion slowly dissipated and the Taleban were able to characterise air strikes as attacks on the people and, more perniciously, as attacks on Islam. Unfortunate collateral damage events such as an attack on a wedding party and more recently against a hospital caught the attention of the world's press and undermined the legitimacy of the operation.

Gulf War II

To preserve the element of surprise and deny Saddam the opportunity to take pre-emptive action such as the burning of oil wells, in the 2003 invasion of Iraq, there was no precursor air campaign. Gen Franks intended 'Shock and Awe', using high technology air and ground assets, would rapidly overwhelm Iraqi forces and persuade them to give up. Air power was therefore largely limited to the role of supporting land forces.

However, after a reasonably successful first week with a number of intense battles, Iraq was blanketed by huge sandstorms. In this period, known as 'wobble weekend' the land

offensive slowed to a halt while the Iraqis took shelter where they could, including under bridges. Despite these sandstorms, aircraft using precision, satellite-guided munitions of the JDAM type, targeted armour and infantry in known locations, including under the bridges. As COMCENTCOM himself recorded, 'When individual tanks and artillery pieces suffered direct hits from JDAMs during the height of the three-day sandstorm, Iraqi morale plummeted'.[6] There seemed no place to hide and this affected the will of soldiers and officers alike. Most Iraqis, quickly appreciating that the overthrow of Saddam was a foregone conclusion, just deserted. 'I asked Petraeus about enemy prisoners of war. 'We don't have a whole lot, Sir. Most of them took off their uniforms and just walked home."[7]

Of course, there were ground battles, and some were severe, but for many progress was uninterrupted except by localized skirmishes. Typical was the comment by a US Marine. After leaving Kuwait, Lance Corporal Edward Shirley's M1A1 Abrams tank… travelled through Basra, up the Euphrates and Tigris rivers, and into Baghdad. 'At some point we expected there to be an armored battle but it never happened…. the air force had taken out most of their tanks and others were abandoned. We saw a lot of burned-out Iraqi armor…'

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At war's end Iraqi political power had been passed from Sunni Ba'ath party activists to Shia irregulars, and the newly unemployed veterans, most of whom were Sunni, became resentful. The ensuing demonstrations, increasing anarchy and growing insurgency required air power to be used in a similar *modus operandi* to Afghanistan, but again without sufficient ground or air forces to dominate the ground. General Eric Shinseki, U.S. Army Chief of Staff, had recommended 'several hundred thousand' troops be used to maintain post-war order, but then Secretary of Defense Donald Rumsfeld—and especially his deputy, civilian Paul Wolfowitz—strongly disagreed.

An increasingly useful asset in both Afghanistan and Iraq was, and is, the Unmanned Air Vehicle (UAV)/Remotely Piloted Aircraft (RPA). Initially used solely for localized visual reconnaissance, RPAs slowly began to use a wider range of sensors and to be equipped with short range missiles. Such systems remove the risk of pilot capture, have relatively low detectability, long persistence, and in clear weather the ability to monitor ground activity with great discrimination. When armed with weapons such as Hellfire they reduce the detection to shooter time to a matter of seconds, but with the decision to use a weapon often dependent on robust Rules of Engagement or a high-level political decision.[8]

Libya

In February 2011, civilian unrest and protests against Colonel Gaddafi's regime began, and it soon became clear that a massacre of rebels and their families would be likely in and around Benghazi. Gaddafi's forces had been detected marching on the city with armour, while the Rebels were armed with small arms and truck-mounted guns only. Over 800 British and 1,000 others were quickly evacuated. *HMS Cumberland/HMS York* rescued 468 from Benghazi, while RAF C-130 aircraft with the SAS rescued 429, most from hostile sites deep inside Libya.[9]

The West's involvement in Libya followed a similar tactical approach to that used in the Afghanistan invasion, except that no Western ground forces were deployed. In many respects it is a model politicians would choose for the future.

On 17 March, the United Nations Security Council adopted Resolution 1973 which reinforced and tightened the arms embargo against Gaddafi, established a no-fly zone in Libyan airspace and authorised 'all necessary measures ... to protect civilians and civilian populated areas under threat of attack… while excluding a foreign occupation force of any form on any part of Libyan territory'.[10]

The West responded quickly using the inherent flexibility of their air forces. On 19-20 March US, UK and France established a NFZ over Libya, and this was followed by sizeable air attack against C2, AD and support forces. One hundred and twelve Tomahawk missiles were launched from US/UK ships, and UK-based Tornados, supported by AAR, attacked military bunkers with Storm Shadow missiles. On the second night B-2s and Tomahawks destroyed 45 Hardened Aircraft Shelters (HAS) at the main airbase near Sirte. By Day 3, all Libyan air defences had effectively been neutralized.

Once air superiority had been achieved, aircraft attacked Libyan armour outside Benghazi. The rebels were thus empowered not only to protect themselves but then take the fight on to Tripoli.

Operations concluded after the occupation of Tripoli and the capture and death of Col Gaddafi on 20 October. Gaddafi's attempt to escape had been detected by intelligence, surveillance, target acquisition, and reconnaissance (ISTAR), with information passed to rebels to enable them to intercept his convoy.

Despite the initial US reluctance to become involved, NATO had been heavily reliant on US assets. Although Europe provided most of the air firepower, over 70% of all support sorties were provided by the USA. This underscores not only the scale and complexity of a successful air operation, but also the gaps in European nations' air forces.

The ending of the conflict was greeted as a new dawn for Libya. However, just as in Afghanistan and Iraq, the political situation rapidly deteriorated with no central authority and

with powerful warring militias holding the balance of power. An inescapable lesson from all conflicts is the need for effective post-conflict planning and pacification, especially without a Western ground force presence. This issue is probably as complex and onerous as winning the conflict in the first place.

Islamic State (IS)

Creating a political vacuum is always an invitation for exploitation, and nowhere was this more evident than in Western Iraq, and across into Syria as it collapsed into civil war. After the West had declined to become involved in Syria, a sect of Al Qaeda established there a regime based on terror. The group began referring to itself as the 'Islamic State' (IS) in June 2014, when it proclaimed itself a worldwide caliphate, and named Abu Bakr al-Baghdadi as its caliph, a man who had been a colonel in the Iraqi army. As a caliphate, it claimed religious, political and military authority over all Muslims worldwide. Using the internet and Media, IS immediately began recruiting disaffected youths from across the world, including from the Islamic diasporas in Europe. Most were attracted by adventure, peer group pressure and the romanticism of Jihad. Both to intimidate neighbours, as well as encourage supporters, IS began a campaign of rape and pillage across the areas shown. Inhabitants were terrorized, forced into sexual slavery, and opponents such as Yezidis, Christians and Kurds, exterminated in the most brutal ways, all designed to capture the world's attention.

Funded by taxation from conquered areas, the sale of plundered antiquities, by naïve Sunni millionaires and oil wealth from captured oil refineries, IS soon had a sizeable war chest, and procured or captured modern weapons including tanks and missiles. Before long IS sychophants were also conducting terrorist attacks more widely, in Europe, Turkey and the Mahgreb, and had spread its tentacles to Nigeria (Boko Haram), Libya, Tunisia, Aden, Egypt and Beirut to name but a few.

Without wishing to be drawn into the Syrian civil war and fearing greater involvement in Iraq, a US-led coalition[11] began an air intervention to support the Kurds and the Free Syrian Army in their fight against IS and Bashir al Assad respectively. In the confused situation, with great powers supporting opposing sides in the civil war, Turkey, on 24 Nov 15, shot down a Russian

Su-24 that it claimed had infringed Turkish air space. That this alone could have been a casus belli is clear. 'This goes beyond the normal struggle against terrorism. This was a stab in the back by the accomplices of terrorists,' Mr. Putin stated, an apparent reference to Turkey's support for Syrian rebel groups.[12]

Western commitment seemed half-hearted; actions seemed to reflect the precept 'something must be done; do something'. Although the number of flights looked impressive, the coalition was constrained by tight Rules of Engagement (ROE). Reportedly for the first year, attacks on enemy oil tankers, on which IS financially depended, were withheld as the allegiance of the drivers could not be ascertained. British air attacks were initially confined to reconnaissance, then to air attack inside Iraq only. Reaper RPA were then deployed, and then an additional two Tornado bombers (bringing the total to just eight). Finally, and following the November 2015 IS Paris attacks and a vote in the House of Commons, British forces were allowed to attack IS targets in Syria. Hardly a well-planned decisive operation!

In contrast, when Russia decided to support Assad's forces, it did so with determination. According to one early report, 'Moscow's warplanes have carried out a staggering 394 sorties in just the last three days, hitting 731 rebel targets across Syria.'[13] This size of air attack, coupled with far less sensitivity to collateral damage and civilian casualties, not only destroyed many targets but more importantly it re-invigorated the Syrian army and encouraged it to resume its offensive against both the US-supported rebels, and IS.

In November 2015, with little Western progress and with IS still in possession of considerable territory from Raqqa in Syria to Mosul in Iraq, Western commanders began to increase the tempo and systematically to attack IS' sinews of war.[14] Oil tankers, oil collection points, pump stations and wellheads, as well as the cash hoards upon which IS depends were finally all targeted. The new resolve will hopefully encourage and facilitate effective offensive actions by both the Kurdish Peshmerga and the Iraqi army and should begin to reverse IS's fortunes. However, doubts remain, 'The gradualistic, painfully slow, incremental efforts of the current administration undercut the principles of modern warfare, and harken back to the approach followed by the Johnson administration.'[15]

There is clearly much still to play for, but at the time of writing it is difficult to see how the confused Middle Eastern situation can be resolved. For example,Turkey's main enemy are the Kurds, the very allies on whom the Coalition relies on to engage IS.

With Russia now more than ever involved in the region, we can expect to see air power used not just as a military weapon but increasingly as a political signal as well, witness recent Russian air attacks (17 and 18 August) from Iran and the provision of an S-300 SAM to that state, no doubt to signal a rebalancing of US power in the region.

Air Power – the Future

The only thing that we can forecast with any certainty is that the future will surprise us. Nevertheless, because we will be surprised, it is highly likely that we will have to respond quickly and with our most flexible capabilities. In that case, air power will remain a vital element in the National Security locker. Its very potency makes it attractive, militarily and politically, but we need to comprehend the full range of intended and unintended consequences: physical, psychological and populist.

Air power is clearly no panacea; and, as we are seeing on a daily basis in Syria, without credible and coordinated ground force, air power cannot deliver sound permanent prospects for peace alone. Serious thinking is required as to how we maximize air power's results in joint or coalition operations, against threats which will likely continue to bedevil humanity this century.

'Our problem was we always made it look too easy.' – Gen Carl Spaatz, USAF

Of course, given the superb capability of Western aircraft, the West's air forces are known to be able to range across a battlefield with impunity, attacking whatever target we desire with great accuracy. That it seems so easy belies the huge investment of time, resources and energy that goes into making a precision attack seem so effortless and, at the same time, invulnerable. However, if the 1973 Yom Kippur war teaches anything, that luxury may not always be guaranteed, as the balance between offence and defence is never-ending. The effectiveness of newer Russian SAMs and radars mean that even today's stealthy aircraft may one day become detectable and vulnerable. In particular, the RPA so utterly dependent on electronic links, and upon which we now place such reliance may, as one USAF General noted, in war 'fall from the skies like rain'.[16]

If this were not bad enough, military forces and civilian industries remain totally reliant on high speed computers and reliable high-bandwidth communications which need considerable protection both against cyber-attack and to prevent them from being destroyed or hijacked. Militarily, there are also too few assets, be they aircraft or RPAs, to meet the growing scale of threats. And in this sensitive world, although we gain access to high quality imagery, its coverage is patchy, and so often in sorting out the intelligence wheat from the imagery chaff we fall down. Effective targeting relies on accurate intelligence, now more than ever important with omni-present Media and the new social instruments, such as Twitter and WhatsApp in everyone's pocket.

While this level of complexity is relevant in the more traditional force-on-force interstate warfare, it is still very much a problem even in the limited operations such as Syria today. Hybrid or ambiguous warfare is designed to confuse, and Crimea has already shown the complexities of establishing exactly what is happening and who is involved.

A stark lesson from both Vietnam and Kosovo is the deleterious effect of uninformed political involvement. Politicians have been given an awesome weapon; it is a shame they virtually never participate in exercises and learn how to use it. They must appreciate that naïve interventions or cacophonous direction makes an operation less than decisive, likely extends the conflict, increases costs and casualties, and often achieves the very result they sought to avoid. A good politician, like a good general, needs to say what he wants to be achieved, not how to do it.

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For the foreseeable future, and because of its strengths, air power will however, remain a favoured political weapon. Unlike a ground force which, once committed remains in the firing line, air power can be scaled up or down at will. But by being so responsive, it can encourage political vacillation and indecisiveness, and offers the luxury of waiting for consensus before acting with resolve. This offers an enemy the prospect of targeting the commitment of weaker members. If future air power is to be used effectively, and not just used for political symbolism, then firm international political leadership will be required - and for the future this may be a problem.

A final thought, from the other side of the coin - now that high technology, such as mobile phones, computers, and even drones are available across the entire world - by how much have we unwittingly empowered the underdog? On 9/11 we saw the effectiveness of turning the West's high technology against us. What will they think of next?

Notes

[1] Speer to USSBS Survey Interrogators on the Hamburg attacks. (USSBS Summary Report). http://www.anesi.com/ussbs02.htm

[2] General Norman Schwarzkopf, *It Doesn't Take a Hero*, Bantam Press 1992, p. 439.

[3] Reported in Ibid.

[4] Benjamin J Lambeth, *NATO's Air War for Kosovo*, Rand Corp, 2002, p. xvii.

[5] https://www.hrw.org/reports/2000/nato/Natbm200-01.htm

[6] General Tommy Franks, *American Soldier*, Regan Books 1st Ed, 2004, p. 559.

[7] General Tommy Franks, *American Soldier*, Regan Books 1st Ed, 2004, p. 522.

[8] As was so well-illustrated in the 2016 film 'Eye in the Sky'.

[9] http://www.raf.mod.uk/news/archive.cfm?storyid=A4A68A2F-5056-A318-A8DEE3EE8FDF6F11

[10] HCDC Report – *Operations in Libya*, p. 13.
[11] In September 2014 U.S. Secretary of State invited Ministers of the United Kingdom, France, Germany, Canada, Australia, Turkey, Denmark and Italy, to support the fight against ISIL militarily and financially.
[12] http://www.bbc.co.uk/news/world-middle-east-34907983
[13] http://www.express.co.uk/news/world/620958/Russian-airstrikes-Syria-kill-600-Moscow-doubles-jets
[14] http://www.usatoday.com/story/news/politics/2016/04/19/new-rules-allow-more-civilian-casualties-air-war-against-isil/83190812/
[15] Lt Gen Dave Deptula, http://www.usatoday.com/story/news/politics/2016/04/19/new-rules-allow-more-civilian-casualties-air-war-against-isil/83190812/
[16] Lt. Gen Dave Deptula, conversation with author.

Viewpoint

Operation Granby: A Personal Perspective

By Air Commodore (Retd) Alistair Byford

Biography: After a 35-year military career, Air Commodore Byford is currently the Defence and Political Adviser to MBDA, where he is principally responsible for strategic engagement between the company and the Front-Line Commands. During his RAF Service, which started as a University Cadet at Cambridge, he flew 4,000 hours as a Tornado pilot in the strike, attack and reconnaissance roles, commanding at every operational level. Staff appointments included a spell as Director Defence Studies (RAF) and his last appointment as Assistant Commandant (Air) at the Joint Services Command and Staff College.

Introduction

Context

It is over thirty years since I flew my first combat mission. Since then, I have taken part in many operations, but inevitably, my first experience of battle made the most powerful impression on me, and with hindsight shaped my subsequent career. In January 1991 I was a first tour Tornado strike/attack pilot destined to play a very minor role in Operation Granby, the UK's contribution to the coalition created to free Kuwait after its invasion by Saddam Hussein's Iraq. I can still clearly remember the heady mixture of excitement, anticipation and dry-in-the mouth trepidation I felt as I pushed the throttles through the gate, engaged reheat and thundered into the night sky of the Gulf at the back of an eight-ship formation. I needed all the power on offer because my newly desert-pink painted jet was heavily laden with eight 1,000lb iron bombs on draggy, twin-store carriers. Like the other fifteen aircrew in the formation, I had no previous combat experience, but a very clear expectation of what an air war would look like. This was shaped by the culture of the force I was part of, the equipment I flew and the way I had been trained and indoctrinated since arriving on a front-line squadron as a junior pilot three years previously, and I will return to these themes below.

Arguably, the 1991 Gulf War represents the most significant watershed in the RAF's post-Second World War history. Although the air force has been involved in many conflicts since 1945, up to Operation Granby the active involvement of its combat air elements were relatively brief and niche in nature.[1] In the Cold War, the RAF was essentially a peacetime deterrent, untested in actual combat. The Gulf War changed all this. The majority of the available fast jet force was committed to battle,[2] giving a whole generation of RAF personnel – including myself – their first taste of combat. It also transpired that the end of the conflict did not mark the expected return to peacetime flying and the *status quo ante*, but rather the beginning of a period termed by a former Chief of the Air Staff as the 'Age of Uncertainty'.[3] This saw the RAF committed to continuous combat operations which endure to the present day: at first in Iraq again, and then subsequently and in quick succession, Bosnia, Kosovo, Afghanistan, Libya and, most recently, Syria and Iraq once more.

However, the Gulf War is more significant for the RAF than merely being a point of transition between the uneasy peace of the Cold War and the ceaseless combat operations of the succeeding three decades. The intensity of combat at scale challenged and then forced us to change our assumptions, doctrine and eventually our very culture; or what Clifford Geertz describes as 'the stories we tell ourselves about ourselves'.[4] It also led to changes in equipment and training and, in particular, drove the transition from a static, home-based, Cold War force construct based on numbers, mass and attrition to a paradigm centred upon the expeditionary delivery of highly precise effects in support of the joint campaign. It is no coincidence that these changes paralleled transformation in the strategic context. The Gulf War is neatly bookended chronologically by the fall of the Berlin Wall in November 1989 and the dissolution of the Soviet Union itself in December 1991. This heralded a switch in planning and purpose

from force-on-force Clausewitzian wars of national survival to wars of choice fought 'amongst the people'.[5]

However, history tends to be cyclic, not linear, and although the RAF has spent most of the period since the Gulf War supporting counter-insurgency operations with the benefit of almost total air superiority,[6] the Ukraine conflict is now challenging this model. The emergence of a bellicose Russia and the rise of China had already led to the proliferation of freely exported, highly capable anti-access and area denial weapons (particularly sophisticated surface-to-air systems such as the Russian S-300 and Chinese H-9 family) threatening Western air supremacy. The Ukraine war and the techniques and technologies employed (both top-end and innovative and novel) have demanding a renewed focus on peer or near-peer combat at scale. This in itself makes the Gulf War worth examining as the RAF's last experience of something like this kind of operation.

The recent development of concepts such as 'Agile Combat Employment' and 'Hostile Risk Operations' demonstrate the RAF is rediscovering some of the Cold War ideas such as dispersal and survivability, the need to protect the home base and the requirement to generate combat mass. Perhaps most importantly – and most problematic, as it requires a cultural shift from where we have been over the last thirty years – is the growing understanding that risk may need to be approached in a different way when the threat is existential and casualties and attrition simply inevitable. This involves not just the risk we accept on operations, but also the way we develop and procure capability and equipment. UK support for Ukraine has been a useful reminder that cheap, quick and agile capability development is possible, but only if our current procurement system, which insists on a near-zero risk approach which inevitably adds huge cost and delays to any programme, is mitigated or even bypassed completely.

What follows is unashamedly a personal reflection based on my own experience as a junior pilot, and in no way reflects any officially sanctioned view of the war. This was a formative and sometimes visceral experience early in my career and I am very conscious it shaped my subsequent outlook, thinking and approach. Indeed, I often had to question whether my responses to later leadership or decision challenges were a logical response to the particular circumstances at the time, or a lazy reversion to an early experience of combat not necessarily appropriate to a very different context. So, I will not seek to assess strategy or analyse operational-level decision-making in 1991, but instead reflect my impressions at the sub-tactical level. My interpretation of events is purely my own; many of those also there will have seen and experienced the same events in a different way and will, no doubt, wish to challenge my assertions. So be it.

The RAF in 1990

What did the RAF that went to war in 1991 look, feel and think like? First and foremost, it was a peacetime air force, or at least my part of it, the fast jet force or combat air element, was. At a mess dinner at a Tornado base in the early nineties it was exceptional to see anyone wearing a

campaign medal, because there was simply no recent combat experience. A few hardy souls had been involved in the Falklands War nearly a decade previously and, of course, the support helicopter force was actively engaged in Northern Ireland, but these experiences were virtually non-existent within the Tornado force.

However, although we had no direct experience of war, we thought we knew what a war would be like. For almost fifty years the RAF had configured itself to fight the Warsaw Pact in North-West Europe. This meant developing pragmatic ways of countering numerical superiority and operating in the face of a sophisticated, integrated air defence system. Because we could not resource a suppression of enemy air defence capability to counter the surface-to-air missile threat at altitude (where the North European weather would likely preclude operations anyway), the solution was to attack at low level, under the radar to exploit surprise. It was accepted that casualties would be very heavy. For example, the planning assumption for the RAF Marham Tornado Wing's 'Day One' of the war 'Option Alpha' pre-planned conventional attack mission was up to a 50% attrition rate. Cold War calculus determined this was a price worth paying in a war of national survival to suppress a key enemy airfield and help buy time for the cavalry, in the shape of the USA, to cross the Atlantic and ride to NATO's rescue. There were many consequences of this philosophy and these are worth exploring because of the impact they had on the conduct of the Gulf War. Three broad areas are worth considering: doctrine, equipment and training. In combination these generated a fourth: the particular mind-set and institutional culture they engendered.

Doctrine

As has now been well documented, the RAF took a 'doctrine holiday' for a protracted period leading up to the Gulf War. This was because of the accepted premise that the only conceivable use of UK air power was as part of NATO operations in Europe. Events such as the Falklands War were dismissed as aberrations and, despite the efforts of individuals such as the then Director of Defence Studies, Group Captain Andy Vallance, to promote broader thinking about the wider employment of air power,[7] the overwhelming consensus was that there was little point in expending intellectual effort on the strategic or even operational use of air power. Instead, the focus was firmly fixed on tactical excellence in the execution of tactics, training and procedures ('TTPs'), based on an expert knowledge of NATO SOPs (Standard Operating Procedures) and STANAGs (NATO Standardization Agreement). Only tactical thought was therefore required to determine how we could best execute the various NATO SUPPLANs (NATO Supporting Plan) by meeting our obligations to fill the slots allocated to us on the Air Tasking Order. Pre-scripted and carefully choreographed plans were rehearsed endlessly, but procedural excellence came at the price of a certain rigidity in outlook. It is easy to be sceptical about the value of doctrine, but at the very least it shapes mind-sets and sets institutional cultures and expectations. Without it - or at least thinking about it - the natural tendency of airmen to focus on the technical and the tactical at the expense of broader and more imaginative thinking was exacerbated. Undoubtedly, in 1991 this hindered our ability to understand and adapt quickly enough to the demands of a different sort of war in a very

different sort of place to the war we had prepared for in such depth over such a long period of time.

Equipment

The commitment to low-level operations drove equipment procurement, in terms of both platforms and weapons. The Tornado itself is a good example. With a small wing area and high bypass turbofan engines, at low level it provided a smooth ride, excellent gust response, good fuel economy and a very stable weapons aiming platform. However, this all came at the expense of altitude performance, and a war-loaded Tornado struggled to reach half the cruising height of a typical airliner. Clearly this hindered its subsequent adaptability, and although the Tornado provided absolutely sterling service and was repeatedly updated to keep it current as a weapons platform, this was in spite of (rather than because of) its fundamental design and aerodynamic qualities.

The Tornado's weapons suite was also optimised for low-level employment: 1,000lb retard and ballistic bombs,[8] the JP233 anti-airfield weapon, BL755 anti-armour cluster bomb and twin 27mm Mauser cannons were all designed to be used at low level. The only exceptions, and only guided weapons in the arsenal, were the AIM-9L Sidewinder for self-defence and the Air Launched Anti-Radiation Missile (ALARM) for suppressing air defences, although it was envisaged that both would be launched principally at low-level anyway.

The focus was on cheap, unguided weapons to provide big stockpiles and generate the mass effects required for large-scale attrition if and when the Cold War turned hot. The inherent inaccuracy of these weapons was offset by large warheads (so a near-miss would hopefully still achieve the desired outcome), or area effects (such as the football-field sized footprint provided by the cluster of 147 bomblets delivered by the BL755). The logical corollary of this philosophy was the WE177 tactical nuclear weapon, which like the rest of the Tornado's weapons was unguided and intended to be dropped from a low-level profile, but could generate an effect which would more than make up for any lack of accuracy. Clearly, the potential collateral damage effect of all these weapons was huge, but this was not expected to be a major factor in the kind of existential (and probably nuclear) conflict foreseen in a European Third World War.

Training

Operating at low-level is demanding and requires continuous practice, especially because the continuing dependence on unguided weapons meant the skill of the crew in aiming them, not technology, would determine if the desired effect could be achieved. Using dumb weapons at very low-levels required extremely accurate flying and set parameters to be achieved, demanding a very rigorous training regime which carried its own inherent risks. Bird strikes, controlled flight into terrain, mid-air collisions in uncontrolled airspace (in an environment where much larger numbers of aircraft were operating than today) and pilot error all imposed a steady toll of casualties which would be unacceptable and unsustainable

in today's RAF. In the late eighties, peacetime training attrition in the military fast jet force was running at 10-20 aircraft and aircrew every year (the equivalent of an entire squadron), but this was universally accepted as absolutely par for the course.[9] In itself, this loss-rate reinforced the prevailing mind-set that fast jet flying was an inherently risky business where casualties could not only be expected but were inevitable, in peacetime as well as war. It is sobering to reflect that the RAF lost nearly fifty of the original 220 Tornado GR aircraft originally procured: seven in combat, but over forty in flying accidents, mainly in the pre-Gulf War era.

Culture

The doctrine (or lack of it) and focus on low-level equipment and training tailored to a specific purpose, war against the Warsaw Pact in Western Europe, produced a powerful organisational culture and drove a particular mind-set. The Tornado force expected to fight from its well-found, hardened, permanent main operating bases in the UK and Germany and this was frequently tested and practised when we were called to demonstrate our readiness at no-notice by the siren call of the TACEVAL (NATO Tactical Evaluation)[10] hooter. The expectation of what war would be like was shaped by the requirement to don nuclear, biological and chemical protection (flying even a simulator sortie wearing the AR5 aircrew respirator assembly still sends a shiver up the spine of Tornado aircrew of a certain age) and display our competence in our primary role: nuclear strike using the WE177 tactical nuclear weapon. All this cemented the widely held view that a future war would be so devastating that conflict was almost inconceivable; so in all honesty, very few of us joining the Tornado force in the late eighties truly expected to have to fight, unlike the situation today. After all, over the preceding fifty years, several generations of our predecessors had served full careers – those non-campaign medal wearing seniors at mess dinners – without having to do so. But if we did engage in conflict, our training and indoctrination led us to believe casualties would be very high, in both the conventional and nuclear stages. Within the expected context of global Armageddon and the near certainty of our eventual demise, the emphasis was on buying time and selling ourselves as expensively as possible, reflected in the number and type of weapons we would drop, from tactical nuclear bombs at one end of the scale to cluster munitions at the other. The focus was firmly on doing as much damage to the enemy as possible before our own inevitable destruction; almost regardless of the consequences, including any associated collateral damage effects.

In summary, the pre-Gulf War RAF fast jet force had very little or no experience of war, and did not, in its heart of hearts, ever expect to fight, because the consequences would be so dire (for itself and everyone else) if it did. Events were to prove that it was very difficult to break the mind-set generated by almost fifty years of preparation solely for a certain kind of war. The force I flew with believed that in the unlikely event of being committed to combat, our fundamental purpose was to maximise weapon effects rather than put a premium on our own survival, and heavy casualties were inevitable. This perception was only reinforced by the steady drumbeat of peacetime attrition that was accepted at the time as a matter of course. If anything, it was heightened, when the Kuwait crisis erupted in the summer of 1990, when

we learned the Iraqi armed forces were largely equipped with the same types of Soviet aircraft and air defence systems we expected to encounter in Europe, so it was easy to assume this would be the sort of conflict we had prepared for: '*the* war' rather than '*a* war'.

Deployment and Preparation

One manifestation of the lack of previous combat experience was a certain naivety and the rules-free, 'all bets are off' approach that was sometimes apparent in the preparation phase in theatre. There was an unspoken assumption that tiresome peacetime rules and regulations were no longer necessary now we were 'on operations', an unaccustomed novelty for virtually the entire force. Unfortunately, this resulted in the avoidable loss of an aircraft and two crew members in a low-flying accident immediately prior to the war, and demonstrates the importance of maintaining supervisory control and discipline even (and perhaps especially) under war-time conditions.

There was a widespread perception that this was a 'once-in-a-generation' event which was very unlikely to be repeated, and whilst some were dismayed at the prospect of impending combat (there was a very small 'I didn't sign up for this' element), a much larger cohort was more concerned about the career implications of 'missing out', so a degree of 'entry-ism' was also evident as we prepared and deployed.

With hindsight, these pressures contributed to some flawed decision-making about force selection and deployment. One squadron lost its commanding officer in a flying accident during a pre-deployment work-up sortie in the UK. His successor had already been nominated as part of the routine command rotation process and naturally wanted to go to war with his new squadron following the loss of his predecessor. However, he was still converting onto the Tornado from another aircraft type, so was rushed through the remainder of his course to deploy in time. Unfortunately, and with very limited hours on the Tornado, he was tragically lost on his first mission flying a very demanding low-level flight profile at night which was unfamiliar to him. An interim commander (an outgoing squadron commander) was temporarily appointed to lead the squadron on its return to the UK whilst a new permanent commander was put through conversion. Four squadron commanders in six months constitutes a Second World War-level of attrition and the effect on cohesion and morale may be imagined. The current force commander construct is obviously very welcome if one of the benefits is to free the principal decision-maker from the distractions of running a station, so he or she can concentrate on knowing and understanding the readiness and capabilities of the force he or she is responsible for more intimately. This should enable better and more informed operational judgements to be made, including selecting who is, and is not, fit and ready to deploy.

Another corollary of the perceived exceptional nature of the operation was the natural desire to assemble an 'A-team' (those considered as the best, most qualified and most experienced operators) to fight what was expected to be a one-off event as effectively as

possible. However, under the stress of combat age, experience and qualification did not necessarily provide a reliable indication of performance under pressure, and the 'all-star' concept was no guarantor of best results. The more experienced aircrew naturally tended to be older and therefore family men with more to lose, and the relatively small number of 'combat refusals' we experienced tended to be confined to this group rather than more junior aircrew, who generally performed at least well enough and often outstandingly, and most importantly were happier to fight a high-risk war.

The decision to cherry-pick crews rather than deploy as formed squadron units also had important implications for command. Core squadron cadres along with their commanding officers were deployed to the three main Tornado deployment bases used in the Gulf, but individual four-ship elements drawn from other squadrons were used to augment them into larger non-formed units. This meant individuals within the detachments could be entirely unknown to each other (the Tornado force was at its peak at this time, with four main operating bases split between the UK and Germany) and there was no, or at best limited, access to the Form 5000[11] and other supervisory tools. Given a squadron commander with the right leadership qualities and personality, the non-formed unit model might (and did) work well. However, at the location where I was based the model failed utterly and there was little effort, or even interest, in ensuring cohesion and inclusivity across the entire detachment. With a limited flow of information and direction, the individual four-ship force elements turned inwards and fought their own war in their own way.

One important lesson I drew from this was that there was a very good reason why Lord Trenchard saw the squadron as the building block of the RAF. Clearly, there will always be circumstances when augmentation or specialist skills are required on a detachment, but as a point of principle I would always prefer to commit to battle (either in command or under command) wherever possible as a formed unit. This might appear to provide less capability than selecting the best qualified individuals from across a force, but in my experience is more than offset by the cohesion and spirit built up over time; particularly the shared understanding of the strengths and weaknesses of the whole team, led by a known and established point of command.

Execution

Phase One – Low Level

For the reasons previously explained, the Tornado force's natural specialism, by dint of training and equipment, was suppressing the Iraqi Air Force's ability to generate a high-tempo sortie rate by attacking the operating surfaces of its major airfields. This was an important task, as at that time the Iraqis possessed the fifth largest air force in the world, including modern Soviet types such as the Fulcrum fighter, and was expected to put up a stiff fight after Saddam Hussein had promised the Coalition 'the Mother of all battles'.[12] Early missions were flown at night against Iraqi bases using the specialist JP233 anti-airfield weapon, which dictated a very low-level attack profile along or across runways. Sometimes the main attack force was

supported by aircraft lofting 'slick' (ballistic) 1,000lb bombs in an attempt to suppress flak (most airfields were heavily defended by anti-aircraft artillery), or ALARMs where intelligence had identified a surface-to-air missile threat. The attack formation was invariably part of a much larger package of aircraft, usually contributed by US armed forces and including fighter escort, stand-off jammers and 'wild weasels' with a hard kill, destruction of enemy air defence capability provided by the AGM-88 High-Speed Anti-Radiation Missile.

These missions had some success in denying the Iraqi Air Force the freedom to operate from its main operating bases, but the hazardous flight regime, demanding weapon release profiles and strong air defences resulted in four losses (in combat accidents and by enemy fire) in the first week of operations: over 25% of total Coalition losses for about 2% of the sorties flown at that time.[13] However, this high loss-rate was neither unexpected nor surprising to us given our chosen modus operandi and pre-conceptions of what an air war at scale would look like. Although unwelcome and tragic at a human level, in the light of the heavy defences and testing flight regime, the casualties were in line, or even less, than our expectations for this sort of operation. It was only when we looked elsewhere, at the very low percentage loss rate experienced across the rest of the Coalition, that we began to think that this might be a very different kind of war from the one we had expected, and one which might need to be fought it in a different kind of way from that which we had trained for.

The need for a reappraisal was reinforced when it became increasingly clear that the Iraqi Air Force was not going to come out and fight. It seldom attempted to fly and, when it did mount sorties, these were to take refuge (and face internment with its erstwhile enemy) in Iran, so the absolute priority to deny operating surfaces to the enemy was no longer compelling; it was clearly pointless to suffer a very high casualty rate to deny the enemy a capability which he didn't appear to want to use. Consequently, the decision was made to switch to medium-level night operations, bombing from around 20,000 feet. At this altitude we were safely above most potential anti-aircraft fire, whilst the support package of jammers and weasels could adequately suppress the rapidly degrading Iraqi air defence system.

Phase Two – Medium Level

The difficulty was we had neither planned nor practised for medium level 'dumb' bombing operations. The Tornado's ground mapping radar and main computer were optimised and harmonised for low level, and we had to rediscover arcane planning features like mid-altitude winds and 'D'-factors. Just as importantly, we had no on-board or real time means of assessing where we had dropped our bombs or what, if any damage, we had inflicted (satellite imagery arrived days later and often not at all), so it was impossible to correct, adjust and adapt weapons-aiming methodology as we went along. The learning process included properly understanding safe separation when the relatively new multi-function bomb fuse was employed, and this cost another jet and captured crew when a bomb detonated prematurely beneath the aircraft. Steep angle dive by daylight was an exhilarating and enjoyable alternative to night medium-level bombing (at least for the pilot if not the

navigator), and potentially promised greater accuracy. However, it could still be rather too exciting to be properly effective, as I discovered when diving through a carpet of heavy, 85mm-calibre flak to bomb a Scud missile assembly facility, and in practice the results were not markedly better than level bombing in terms of accuracy. It became apparent that area targets, such as oil refineries or barracks complexes, were the only targets we could attack from medium level with unguided weapons with any real prospect of success.

Phase Three – Precision

The limited effectiveness of medium-level bombing with unguided weapons underlined the need for a precision attack capability to be fielded as quickly as possible if the Tornado force was to retain its relevance in theatre. Ferranti had been running a programme since 1988 to develop a Thermal Imaging and Laser Designation (TIALD) pod, and two pre-production models (instantly named 'Sharon' and 'Tracey' after a pair of notorious characters in the 'Viz' adult comic) were rushed to theatre, along with the civilian technicians who would re-engineer and adjust them between sorties.

More significant heft was provided by a rapid deployment of Buccaneer aircraft equipped with Vietnam War-era Pave Spike laser designation pods. With the addition of Paveway laser seeker and fin kits to modify existing ballistic 1,000lb bombs, we now had the basis for a fair weather, daylight-only co-operative designation (or 'buddy-spiking' capability), with a Buccaneer marking the target for two Tornado 'bomb-trucks' with three Paveway Laser Guided Bombs each acting as the delivery platforms. My four-ship was withdrawn from operations for a couple of days to practise the choreography required, and subsequently executed the first successful Buccaneer/Tornado co-operative strike on 2 February 1991, against a highway bridge over the Euphrates. Thereafter the detachment operated with considerable success, dropping bridges, cratering runway intersections and picking off individual hardened aircraft shelters and their contents. However, the Pave Spike pods were old and weather-limited; the failure of one pod just after weapons release resulted in 'wild' (unguided) bombs and a major collateral event which, in a harbinger of things to come, attracted considerable press scrutiny and subsequently prompted a much greater focus on limiting collateral damage in the target selection and planning process.

We experienced only one more combat loss, our sixth, on St Valentine's Day 1991, when a Tornado at the rear of a long 'daisy chain' of aircraft prosecuting a single axis attack was destroyed by a surface-to-air missile at medium altitude. This prompted some soul-searching about complacency, especially whether ease of planning was trumping considerations of operational efficacy. I claim no particular prescience for earlier flagging this up as a matter of concern, but at this stage of seniority I was a career tail-ender and was, therefore, only too aware that nearly all of our combat losses were concentrated at the rear of formations. Consequently, I insisted (within my four-ship at least) that we compressed time on target brackets, planned multi-axis splits and varied ingress and egress routing. A lesson which has remained with me since 1991 is that however routine the operation appears to have

become, however tired you are and however tedious the planning process is, your own personal survival should provide sufficient motivation for you to take the time to persevere to produce the most operationally effective plan; and you owe this extra effort to those you are leading if not yourself. The 'Kiss principle'[14] is admirable as far as it goes, but it only goes so far, particularly when you are flying as Number 8 in an eight-ship formation.

Consequences – the Dawn of the Precision Era

I returned from the Gulf in the spring of 1991 a little older if not necessarily wiser. After a sojourn as an instructor at Tornado Weapons Conversion Unit - seemingly entirely untouched and untroubled by the war and teaching the same weapons events in exactly the same way as it had when I had graduated three years beforehand - I returned to front-line squadron flying, and another dozen operational detachments over the next fifteen years. So what messages did I take away from those few intense and eventful weeks in 1991?

First and foremost, the Gulf War indicated that the age of precision had arrived. The RAF was already drawing down in size as UK governments sought to reap the post-Cold War 'peace dividend', and clearly a much smaller combat air element would need a more precise weapons effects capability if it was to generate the required outcomes. It was also clear that we would need to husband our resources better, as each aircraft and crew would be an even more valuable asset, so we needed to minimise combat losses as well as maximise weapon effects.

Events in 1991 demonstrated that these demands were not compatible with the unguided weapons we were principally equipped with. They might be cheap, simple and plentiful, but could only be delivered with little if any stand-off, forcing attacking aircraft to over-fly targets in the heart of enemy air defences. Weapons such as the JP233 limited operational choice by dictating that particular parameters were met, which forced us to adopt rigid weapon release profiles and made us predictable and therefore more vulnerable. The high workload and precise flying demanded expensive and risky training to assure proficiency, which also imposed significant costs. Furthermore, the inherent inaccuracy of dumb weaponry meant targets had to be attacked by large numbers of aircraft, or repeatedly re-attacked, to guarantee the desired outcome was achieved, exposing the force to extra risk. Finally, the lack of accuracy meant high numbers of weapons, weapons with a very large kinetic effect, or clusters of weapons were needed to neutralise targets, greatly adding to the risk of collateral damage. In the Gulf War, this became an increasing issue, and in the operations which followed, where popular and political consent was required to support continuing participation in conflicts widely regarded as discretionary 'wars of choice', it has become progressively more unacceptable. It is therefore no surprise that each operation subsequent to the Gulf War has seen an increasing percentage of precision or complex weapons used, and we have now reached the point where, other than the gun, we have no unguided weapons in the combat air inventory.

Again, it is interesting to see how events in the Ukraine are challenging this new orthodoxy. On the one hand, precision has been demonstrated to be more important than ever, but on

the other, cheap drone swarms and off the shelf capabilities rigged with rudimentary warheads have also proved effective in generating combat mass. In an existential struggle, sensitivity about collateral damage is proving a luxury and capabilities such as mines and cluster munitions have been used by both sides. This is no surprise: as a previous UK Air Component Commander pointed out, the Russian air campaign in Syria and Iraq was overwhelmingly based on dumb and cluster munitions to deliver mass effects to destroy infrastructure and coerce non-combatants.[15]

The challenge for the RAF is how to generate sufficient combat effect – probably through a mixture of mass and precision – in a way that is affordable, is sustainable and meets its ethical and legal obligations. The current all-guided weapon inventory certainly does not meet all of these criteria.

Conclusion

Inevitably, my reflections on the RAF's role in Operation Granby focus on the events that made the most impact on me personally, so these tend to be biased towards what went wrong rather than what went right. It is easy with hindsight to pick over the tactical detail, but I believe the most fundamental issue was our collective failure to comply with Clausewitz's famous dictum to understand the kind of war we were fighting.[16] We failed to engage intellectually with the circumstances facing us and instead fell back too readily on our assumption of what kind of war it would be, and simply applied the tactical template we were most comfortable and familiar with. This is an enduring problem which we need to challenge properly every time we commit to operations, because each conflict will be different, and each will therefore demand a different approach.

In many ways, the Gulf War was the progenitor of the next three decades of operations and the current 'Western way of air warfare', based around the principle of minimum force and the delivery of low-collateral and highly precise effects in discretionary wars of choice. However, we should be equally wary of trying to apply this template to future air operations without very careful thought. Ukraine clearly demonstrates a conflict involving peer or near-peer adversaries employing sophisticated capabilities would look very different to our recent experiences. Numbers, mass and attrition will be vital again, and issues like the affordability of weapon stockpiles and the balance between collateral and kinetic effect require careful reappraisal.

In closing, I would like to redress the balance to some extent by highlighting some of the things we *did* get right. Although we may have been slower than we should have been in identifying the need to adapt, once the requirement for change was identified, transformation was quick and decisive, including the innovative adoption of novel and untried techniques and equipment and the insertion of new capability into theatre. It was particularly laudable that we demonstrated the flexibility to extemporise 'in contact' whilst conducting high intensity air operations, and in the end made a hugely significant contribution to the air campaign

and the ultimate success of the Coalition in freeing Kuwait from occupation. However, one note of caution is that in 1991 we had the force depth, capacity and resilience (with 25 fast jet squadrons) to make these sort of changes quickly: it would be much more difficult to generate rapidly additional resource from today's painfully thin combat air element.

I am also proud of the resilience the Tornado force showed in absorbing heavy initial losses, and morale never really dipped significantly, although unsurprisingly a certain gallows humour was evident. On a personal level, I was really only anxious about whether I could do the job properly without letting myself, my navigator and my squadron down by making simple or stupid mistakes under pressure. Ironically, I found it more difficult later, at a less dangerous stage of the campaign, when I knew I could do the job, so had more time to worry about the threats and risks involved. I have nothing but respect for the older and more experienced aircrew with extensive family commitments. Many clearly had very real concerns about their own personal safety, but nevertheless demonstrated the grit and courage to carry on regardless. I clearly remember one formation leader trying to plan a route when his hand was shaking so much that he couldn't hold a ruler. With hindsight, I now recognise he was a very brave man to find the courage to contain his feelings and continue to function effectively. I have certainly found my own response to danger was very different later in my career, with changing circumstances of family and personal life, than it was when I was a twenty-something junior pilot with very little to lose; so perhaps war really is a young person's business.

Finally, whilst the contribution of the Tornado force to Operation Granby may not have been flawless, it was significant and ultimately very effective. It also set the conditions for the Tornado's subsequent unprecedented and unbroken record of operational service where it – and the men and women who flew and supported it – provided the backbone of the RAF's combat capability for over a quarter of a century, continually evolving to deliver the hard edge of UK air power right through to Operation Shader. When the Tornado Force finally disbanded in 2018 it was far more capable and (dare I say) professional than the force I first went to war with back on that humid Gulf night in 1991. Nevertheless, I still count myself as being very fortunate to have benefited from the experience so early in my career, not least because as a military pilot, I believe the ultimate test of ability and professionalism can only be provided by performance in combat.

Notes

[1] Even in the Korea War RAF combat air engagement was limited. Suez and Malaya involved significant combat air elements, but involvement in the Falklands War was confined to a single Harrier GR1 squadron.
[2] Although the participation of the air defence force was constrained to rear area defence and the Harrier force was not deployed.
[3] Air Chief Marshal Sir Stephen Dalton, Chief of the Air Staff, '*Air Power in an Age of Uncertainty*', speech at the Royal United Services Institute, London, 13 July 2013.

[4] Geertz, Clifford, *The Interpretation of Cultures*, London: Basic Books, (1973).
[5] See Smith, Rupert, *The Utility of Force: War in the Modern World*, London: Allen Lane, (2005).
[6] This is, of course, not to say western air-power has been completely uncontested: surface fire, improvised explosive devices and information operations have all been used to degrade the effectiveness of air operations whilst significant and sophisticated air defence threats existed in the campaigns in Iraq (2003), Bosnia, Libya and most recently Syria.
[7] Vallance, Andrew, *Air Power – Collected Essays on Doctrine*, London: HMSO, (1990).
[8] Ballistic or 'slick' 1,000lb bombs could be dropped from medium level, but before the War were almost exclusively delivered using a loft profile from low level.
[9] In the five years prior to the Gulf War, UK military fast jet losses were as follows: 1986 – 13, 1987 – 18, 1988 – 14, 1989 – 11 and 1990 – 15.
[10] The NATO Tactical Evaluation (TACEVAL) process culminated in major, no-notice exercises designed to test all aspects of readiness, force generation and tactical execution.
[11] The Form 5000 is an individual's personal flying record and includes any supervisory issues or concerns.
[12] Hussein, Saddaam, speech marking the 70th Anniversary of the Iraqi Army, 6 January 1991.
[13] RAF Tornado Losses During Desert Storm, www.defenceoftherealm.worldpress.com, accessed 13 April 2018.
[14] KISS = Keep it Simple, Stupid!
[15] Stringer, Air Commodore Johnny, press statement at MOD London, 3 November 2017.
[16] Clausewitz, Carl von, *On War*, Princeton: University Press, (1976).

Viewpoint

Thinking Through the Central Blue[1] - Personal Reflections of the Air Power Thought

By Air Commodore (Retd) Professor Peter W Gray

Biography: Peter Gray holds an Honorary Chair in Air Power Studies at the University of Wolverhampton where he is a Principal Lecturer on the MA in Air, Space and Cyber Power Studies. He was Director of Defence Studies (RAF) from 1999 to 2002 and has been both a Portal and Tedder Fellow. He has published and lectured internationally on air power and strategic leadership over the last 25 years.

Abstract: This article examines a number of cyclical arguments or paradoxes that have existed in air power thinking over the decades. They include the balance between training and education; the balance between technology and humanities and the role of history.

Introduction

The discourse on air (and space) power thinking over the last dozen decades, or more if we encompass the whole period since Tennyson's *Locksley Hall*, has been riddled with paradoxes.[2] Some of these have been fleeting, but many have been recycled with changes in strategy, differing views among senior commanders, emergence of new technologies, budgetary demands and tactical or operational dilemmas. For example, the debates over the primacy of air power versus military forces physically holding ground seem endless. Some major lines of thinking have evolved such as the Douhetian principle of the 'knockout blow' which moved through a phase of attacking vital centres and on to concentric circles of centres of gravity.[3] On the other hand, central tenets such as reconnaissance, in all its forms, and control of the air have remained enduring.

This article will reflect on some of the enduring paradoxes and will look at possible explanations as to why the viewpoints remain unresolved. It must be stressed that, as covered in the subtitle, these are personal reflections based in part on observations made over at least the last 25 years of direct involvement in the teaching, writing and lecturing on air, space and cyber power history theory and practice. It would be possible to attack this issue systematically from the earliest days leading up to the First World War and follow through identifying major milestones over the intervening period.[4] Each event could be examined in the light of changes in policy or high-level strategic thinking, innovations in technology and radical changes in the operational arena necessitating debate. Such an approach, however desirable, is far outside the scope of a short article. Similarly, it would be possible to limit such discussion to the last 25 years to coincide with the anniversary of the first edition of the *Air and Space Power Review (ASPR)*. But arguably, this would cause the omission of much rich material. Instead, a more thematic approach will be adopted covering the major areas where significant divergences of approach have been identified and, importantly, are likely to endure into the future as it becomes more technologically challenging.

A Technical Service: Education and Training

One of the most enduring debates in all air forces encompasses discussion over the balance between education and training. A sub-set of this includes the most desirable ratio between the two. Many policy makers, military and civilian, have consistently argued that as an essentially technical service training in the fundamental aspects of aircraft technology is an essential precursor to the detailed areas of tactics, techniques and procedures. This viewpoint holds that educating personnel is an unnecessary distraction, especially in their formative years. This is a rather simplistic depiction, but as many former Directors of Defence Studies (RAF) have experienced it is one that has raised its head with varying degrees of stridency over the last half-century. As already suggested above, as armed forces move into an era of ever more complex technology, including cyber and artificial intelligence, this trend has not, and will not, go away.

It is improbable that any air power advocate, theoretician or practitioner would advocate the opposite end of the spectrum and suggest that education alone would suffice. Rather the real

debate is more on the ratio of air power education to training and at what stage in people's careers should it occur. There is a detailed specialist literature on the role of educating military personnel.[5] In addition, there is a wide range of studies, mostly from business schools, on learning organisations and the role of education therein.[6] The lamentable reality, however, is that for the nay-sayers, the vast bulk of this learned material remains unread. Whether this is from laziness, anti-intellectualism, prejudice or just a simple desire for the whole to become a self-fulfilling prophecy is hard to discern; arguably it is a combination.

Those that would argue in favour of some balance would opine that it is essential that personnel – of any rank, trade or specialisation – should receive some education in which there is a degree of academic rigour to differentiate it from straightforward training. Beldon and Gray have argued that this transforms a mere trade into a profession.[7] It is, however, important to ensure that the education element being proposed is a true intellectual pursuit. For many years the various air force staff colleges have effectively substituted staff training for genuine education; learning to write staff papers rather than studying the underlying conceptual material was little more than a masquerade. The advent of Masters degree level material and assessment on staff college courses has changed this picture considerably and it is to the credit of various commandants and their masters, along with academic partners that this has produced better educated folk. But it should be noted that this is only 10% (or so) of the officer cadre. Again, in the UK, the Chief of the Air Staff's Fellowship scheme has addressed the broader appetite for real education across all ranks and specialisations.[8] For the air power practitioner (and air traffic controllers), the Open University in conjunction with the United Kingdom Armed Forces Military Aviation Academy has introduced a series of foundation degrees in order to accredit professional training. Additional modules can be taken to reach BSc honours level.[9]

A subset of this paradox is whether new recruits (officer aircrew in particular) should join the services straight from school or have attended university first. The OU scheme described above partly offsets this by allowing later degree accreditation. Ironically in the UK the lengthy periods of backlog in the training system have allowed trainees to catch up on educational tasks, but this is cyclical.[10]

At face value, the debate between education and training may seem somewhat arcane. But there is little doubt of the appetite among serving personnel to better themselves. Furthermore, if one takes career trajectories into account, those destined for the higher echelons of defence, or wider government service, need to be suitably educated to keep pace with their civil service counterparts and the legions of special advisers populating the corridors of power. The quality and the content of the argument rapidly becomes more important than the font and format.

A Technical Service: STEM and Humanities

Taking recent Masters' degree level courses as a guide (so beyond the OU Aviation Systems courses at foundation level), it is clear that the subject matter goes rapidly from the trade or

technical to embrace, for example, Air Power History, Theory and Practice and Air Space and Cyber Power Studies.[11] Other variations include the Defence Studies MA run by King's College London with the Defence Academy. The education offerings are even broader when the wide gamut of Defence Academy work is considered (again with Academic partners such as Cranfield).[12] Many nations have similar academic offerings. But budgets in all areas are limited and prospective students often cannot have a free choice. To varying extents, the subject matter of courses and research, has varied over the decades from purely altruistic subjects, through highly topical subjects through to outputs that meet specific defence requirements.[13]

At face value, there is a very strong logic in this approach, not least because it is taxpayers' money being spent. There are, however, some difficulties. The first of these, from a purist's point of view, is that there is a difference between genuine academic research properly supervised and examined, and what could degenerate into bargain basement consultancy. These are not incompatible but need to be properly managed. This leads directly into a second potential problem area and that is the setting of the research need. Not all senior commanders have the academic background, or skill, to know what has been done and is sitting in the literature and then to pose a suitable research question. The whole is then compounded by the gestation period, especially for doctoral length works which could take four years plus from inception to publication.

From the point of view of air forces generally, and indeed wider society, the days of the genuine polymath ended with Leonardo da Vinci! The vast majority of us mere mortals have, therefore, had to specialize to a greater or lesser extent. That said a certain nameless Director of Defence Studies stated that he may not be the best educated officer in the Service but may have been the most educated! In no way, though, did he claim to be a polymath.
To some extent, the subject matter to be studied or researched may boil down to individual preference covering ground from the classics through history to the frontiers of artificial intelligence. The need for the latter, along with expertise in cyber warfare, may be met from individual endeavour or from a range of agencies such as think tanks, academic consultancy or international collaboration. These entities are usually good at costing their time and resources. As always, producing a timely piece of work can be challenging. It has often been the case in the past that an academic product is delivered and is either out of date or the Service need has moved on. The other side of the coin is more problematic and that is the intangible benefits to the Service of a fulfilled and satisfied individual who has solved to their satisfaction a piece of historical or theoretical research.[14]

A Fighting Service: Strategic Thinking

The debates over the role of strategic thinking, air power theory and the lessons from history have followed the same cyclical path as those already discussed. The hard-line viewpoint states bluntly that air forces have no need of strategic thinking or theory: they are there to fight and that performance on operations is all subsuming. The short version of this is that 'we do air power – not pontificate about it'! This may be a feasible stance to defend if the operational

theatre was static and existed in a vacuum. The reality is that air operations are always part of a wider military campaign which in turn is nested in a greater geo-political situation. The extent to which individuals need to be aware of the wider complexities will vary with interest and curiosity (to some extent), but more likely with seniority. The more involved an individual becomes with decision making, the more it is for them to understand the bigger picture. Eventually, their seniority may be such that understanding morphs into influencing the process or indeed actually commanding it.

This may sound somewhat obvious. But in the heat of the moment when courses of action must be debated and decisions taken is not the time to be inventing a new vocabulary, evolving theories, or debating historical precedents. This is particularly the case when the air commander is working alongside other component commanders who are not only skilled in such arts but are able to deploy a common understanding and professional language. To some extent, joint doctrine will help to provide the lubrication necessary. But the doctrinal process does not exist in a bubble. Nor is it handed down from on high in a ready to use package. It must be formulated in the light of current and future trends and consistent with the aims and objectives of government policy – which may be harder to discern than it sounds. This is especially difficult in periods where doctrine formulation is closely aligned with departmental policy.

The school of thought that believes that air forces only exist to fight has therefore to be expanded to embrace the need to be able to think at higher levels in the fields of strategy, ethics, policy (domestic and foreign) and international relations.[15] As discussed in *Educating Air Forces*, this function is embraced in many staff college courses around the world.[16] In most of these institutions, the academic rigour can usually only be provided by employing academic partners. The alternative is to educate existing personnel to tertiary level (doctoral) and allow them to rotate through existing colleges and universities to gain the necessary experience. Both approaches work and have been used to varying extents. The problem, however, is that they require a considerable lead time to identify suitable people and institutions, train them and build the body of experience. This is not a line of development that can be turned off and on at the whim of a senior commander trying to make an impact in a brief tenure in office.

A Modern and Forward-Looking Service: No Place for History

A senior administrator in an academic institution once remarked that military history was merely nearly dead generals pontificating about their long-dead predecessors. The direct implication was that it was an unnecessary indulgence, notwithstanding the fact that it was a revenue stream for the university. A more serious, but equally hardline view, is that the pace and rate of change in developments in modern warfare render an historical view barely worth the effort. Some have suggested limiting the possible reach back to a particular time period or campaign. Others have sought to identify watersheds in history. The irony in the latter approach requires a pretty detailed knowledge of the history of the forces concerned (or the acquisition of professional advice)! It could be argued that the first Gulf War of 1990-91,

coupled with the end of the Cold War, fulfilled all these criteria. While this may seem reasonable to the people in many air forces, it would be interpreted as parochial and myopic by other military (and naval) folk who regard with some disdain the recent nature of air power.

It could be argued that all that is required from history is the accumulation of the recent experiences of the latest operations, detachments, and trials. The reality, however, is that this distillation of '*what has worked best*' is the seed corn of tactical level doctrine.[17] The same academic approach produces operational doctrine and so on. By stealth, therefore, history, albeit recent history, is an indispensable part of everyday military business – even if many would deny their link with either doctrine or study of the past! With the rate of change of technology so marked in all areas of warfare from artificial intelligence through network enabled operations to fifth generation air power, it is particularly important that we develop the analytical skills necessary to sort wheat from chaff.

As with the other paradoxes in this article, an inwards looking viewpoint is fine if the air arm in question is viewed, and views itself, in isolation. It becomes harder to sustain when historical debate, or a quest for precedent, is employed in a broader context. Some forces (of any arm) tend to view their history as a continuum and not amenable to artificial strategems of division. Others would prefer to follow particular themes or roles of warfare which again requires a longer-term view. For example, an examination of control of the air would be incomplete without going back at least as far as the Battle of Britain or even the First World War. In both the joint and combined areas, a longer-term view is essential. Air-land co-operation would naturally include the Second World War as would the development of Combined Bomber Offensive with the USAAF. If one takes the debate beyond the military or operational arenas and encompasses the background to campaigns, an understanding of the labyrinthine history of the Balkans would be necessary to understand the conflict over Kosovo and Serbia. Similarly, the same could be said over the history of Iraq. The cynic could argue that such history is not the province of the more junior members of the air arms. But many are genuinely curious for the sake of knowledge itself or for the ethical grounding of actions proposed.

A further area in which history has utility is in the formation and maintenance of ethos. This has been the subject of many studies with the RAF and by its CAS Fellows.[18] Every fighting force values its ethos to a greater or lesser extent and air forces are no exception. For many the ethos of the Service will have been imbued as teenagers in cadet forces and reinforced through the selection and training process. One has only to witness the reverence with which Squadron (and other formation) Standards are held to appreciate the integral role that ethos plays in the existence of the component parts of the Service. The formation's history is an integral part of this including the aircraft flown and the battle honours acquired, often at huge cost and sacrifice.[19] History and heritage form important, arguably vital, aspects in establishing the identity of the Service and its people, both internally, nationally, and internationally. The Battle of Britain Memorial Flight and the RAF Aerobatic Display Team are classic examples of heritage and identity.[20] A detailed study of the air pageants at Hendon in the interwar years may not be

necessary to appreciate the long tradition of formation displays, but it is very much part of the Service ethos. If some interest within the Service is not maintained, it would end up delegated by default to enthusiasts' magazines!

Concluding Comments

In many ways, this section title is a misnomer. The article has argued that, despite the potential for hardline viewpoints, the paradoxes discussed have been cyclical and therefore defying a specific answer or conclusion. The first, and arguably the most important point is the acceptance that they are indeed cycles. The wheel is reinvented, the moon waxes and wanes and whatever other simile one desires. Whether it be a Chief of Defence Staff, a Chief of the Air Staff or a Director of Defence Studies, each will occupy her or his own position on the cycle and direct accordingly. Some will have a passion for history, others for technology and innovation. That said, it is possible to identify a number of trends in air and space power thinking. The first of these is growing official acknowledgement of the genuine quest for real education at all levels and all ranks. The author has seen this first hand in the degree programmes and doctoral supervisions and examinations in which he has been involved. It could well be argued that the hunger has always been there, but the funding has been slow to follow. The appetite for learning is broad and the potential subject matter is vast and growing all the time. This presents a real challenge in choosing priorities. Cynics might argue that with whole life careers in decline, some potential students are merely seeking CV line entries. This may be so, but to deny them the opportunity would only serve to deter potential entrants or encourage early exit.

Another inescapable trend is the increasing complexity of the international arena, communications within it and the rising potential for conflict. Whatever the future holds, air and space power will have a major role to play and it is vital that the best is made of the available talents and assets. This will require personnel at all levels to have the intellect necessary to cope with uncertainty, stress, doubt and lack of immediate closure. Training is essential to operate the systems provided, but the higher-level skills are only acquired through education. The more senior people become, the greater the scope for complexity and the accompanying skill sets become more demanding. In the exercise of these skills, air and space power thinking needs to have been imbued and reinforced constantly so that it is part of their psyche and not made up on the hoof!

Notes

[1] For air minded folk, the Central Blue is best associated with Marshal of the Royal Air Force Sir John Slessor's autobiography *The Central Blue: Recollections and Reflections* (London: Cassell, 1956). The title was taken from Alfred Lord Tennyson's poem *Locksley Hall* in which 'airy navies' grappled in the Central Blue. It was also used by David MacIsaac in his chapter 'Voices from the Central Blue: The Air Power Theorists' in Peter Paret (ed.), *Makers of Modern Strategy from Machiavelli to Hitler* (Princeton: Princeton University Press, 1943), pp. 624-47.
[2] Ibid.

[3] For a summary of Air Power Thinking and Theory see Peter Gray, *Air Warfare, History, Theory and Practice* (London: Bloomsbury 2016), chapter 4.
[4] For a detailed examination of the development of air warfare thinking in the pre-First World War period see James Pugh *The Royal Flying Corps, the Western Front and Control of the Air 1914-1918* (London: Routledge, 2016).
[5] The literature ranges from works such a General Sir John Hackett, *The Profession of Arms* (London: Sidgwick and Holden, 1983) and Samuel Huntingdon, *The Soldier and the State* (Cambridge MA: Belknap, 1955) through to Jay Luvass, *The Education of an Army: British Military Thought, 1815-1940* (London: Cassell, 1965). For an excellent recent work see Randall Wakelam, David Varey and Emanuelle Sica (eds.) *Educating Air Forces: Global Perspectives on Air Power Learning* (Kentucky: University of Kentucky Press, 2020).
[6] See, for example, Peter Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization* (New York: Random House, 1993).
[7] James Beldon and Peter W. Gray, 'The Education of an Air Force – a Royal Air Force Perspective' in Wakelam et al, *Educating Air Forces*, p. 232.
[8] Ibid, p. 235.
[9] https://www5.open.ac.uk/forces/supporting-forces/validation accessed 3 Oct 23. The author is an External Examiner for part of this programme.
[10] https://www.defense-aerospace.com/flying-desks-not-planes-backlog-in-royal-air-force-fast-jet-pilot-training/ accessed 3 Oct 23.
[11] The author ran the former at the University of Birmingham and is deeply involved in the latter, mainly with RAF Dowding Fellows, at Wolverhampton.
[12] https://www.da.mod.uk/study-with-us/colleges-and-schools accessed 3 Oct 23.
[13] As required, for example, on the CDS M Res Fellowships as per Beldon and Gray, 'The Education of an Air Force – a Royal Air Force Perspective' in Wakelam et al, *Educating Air Forces*, p. 235.
[14] See Peter W Gray, 'Why Study Military History?' in Gary Sheffield (ed.) *War Studies Reader: From the Seventeenth Century to the Present Day and Beyond* (London: Continuum, 2010) pp. 17-34.
[15] For a discussion on ethics see Gray, *Air Warfare*, ch. 7.
[16] Wakelam et al, *Educating Air Forces*.
[17] For a more detailed review of The Nature of Doctrine see Peter W Gray, 'Air Power and Joint Doctrine, An RAF Perspective' in *The Royal Air Force Air Power Review*, Volume 3 Number 4, page 5.
[18] See for example Fin Monanhan's unpublished PhD thesis from the University of Birmingham, 'The Origins of the Organisational Culture of the Royal Air Force', 2018.
[19] As an example, see the RAF website and the brief Squadron histories: https://www.raf.mod.uk/our-organisation/squadrons/101-squadron/ accessed 4 Oct 23.
[20] https://www.raf.mod.uk/display-teams/battle-of-britain-memorial-flight/ accessed 4 Oct 23.

Defence Research Paper

Military Culture and Human Rights Violations Committed in Iraq in 2003. Has the Military Learnt its Lessons?

By Group Captain Louise Henton

Biography: Group Captain Louise Henton is a serving RAF Officer with over 20 years' experience as a People Operations Officer. Employed across a variety of fields within her Profession, both in the UK and deployed on operations, she is currently the Programme Team Leader for the RAF's Professions Programme responsible for modernising the structure of the RAF into Professions. Her time in command of Recruit Training Squadron in 2015-7 first sparked her interest in the impact of culture on teams, attending the Advanced Command and Staff Course in 2019 she took the opportunity to explore this further in her Defence Research Paper.

Abstract: Nearly 20 years have passed since the human rights violations committed at Abu Ghraib Prison and the death of Baha Mousa at the hands of Western soldiers was exposed to the world. Despite the official investigations into these events, there have been similar repeat incidents. This research has examined whether military culture was a key influence behind the committal of these atrocities vice the bad apples explanation provided by both countries' militaries. The paper reviews the lessons identified against more recent incidents to understand why there have been reoccurrences and, therefore, what more should be considered to reduce the likelihood of such grave misconduct, especially in relation to culture.

Introduction

Nearly 20 years have passed since the pictures of the Abu Ghraib atrocities were broadcast worldwide on CBS '60 Minutes II' and the death of Baha Mousa, while under the jurisdiction of the British Military, became public knowledge. The Abu Ghraib prison scandal occurred in the spring of 2004 when pictures of US soldiers violating the human rights[1] of Iraqi detainees were publicised, causing worldwide outrage. Baha Mousa was an Iraqi hotel receptionist, who in the autumn of 2003 died as a result of the violent assaults and abuse inflicted upon him while in a British detention facility in Basra.

'Culture has been described as the bedrock of military effectiveness'[2] and is regularly used to explain the military's motivations, aspirations and conduct. It is said culture provides a sense of belonging, stability and a common purpose for its members and has been used to set the military apart from other civilian organisations. Military culture has also been held responsible for shortcomings, failings such as cover-ups, discrimination, unethical decisions and an inability to adapt.[3]

Did culture play a role in the abuse committed at Abu Ghraib by American soldiers or the unlawful killing of Baha Mousa by British troops, or was it as both countries' militaries and governments have described it, 'an isolated case of a few bad apples?'[4] The Judge Advocate at the Baha Mousa Court Martial identified concerns over what he saw as an apparent closing of ranks, and the subsequent Public Inquiry highlighted that many more knew about, or participated in, the abuses inflicted on Baha Mousa and his fellow detainees. Therefore, it was not a bad apple, that there was 'something rotten in the entire barrel.'[5] The same applies in the case of Abu Ghraib; 11 soldiers were charged, but many more knew about, or encouraged the guards' behaviour.[6]

In response to these incidents, the UK and the US commissioned investigations to review the causes, identify culprits and ascertain lessons with the intent of preventing repeat occurrences. This paper argues that while some change has been implemented within the British military, the changes introduced have not been sufficient to prevent repeat incidents. To further reduce the likelihood of repeat incidents, the negative effect of culture needs to be recognised and reviewed.

The future battlespace has been identified by the Development, Concepts and Doctrine Centre (DCDC) as 'congested, cluttered, contested, connected and constrained'.[7] The ethical dimension to future operations will continue to be placed under great scrutiny, especially as potential enemies use ethics as a powerful method of undermining political narratives concerning decisions to intervene. Any alleged breaches of conduct will be tested not only in law but publicly in terms of political and social support. The voracity of the pace of news and instant media access can result in information reaching the public domain before commanders. Therefore, there is a need to understand what factors cause military personnel

to act immorally to enable the Armed Forces to adapt and help arm its personnel against committing atrocities in the future.

This paper analyses whether military culture has had an influence on human rights violations in the past and, for the UK military, whether sufficient lessons have been learnt to prevent a reoccurrence. The core argument is that when such unacceptable behaviour occurs, military culture is one of the causal factors, and to minimise the occurrence of repeat incidents there is more the military could do. The intent is to provide military leaders with an understanding of how culture can impact behaviour, positively or negatively, and the importance of using culture to foster a moral environment.

The paper considers the concept of culture to develop an understanding of the key traits of military culture, how it can be used positively, and what risks culture can present. It does not disagree that military culture brings many positive attributes and is an essential feature to sustain effectiveness, morale and cohesion. It focuses on where military culture can be detrimental to such effectiveness and ultimately, reputation.

Official military reports, government inquiries and social psychology academia have been used to analyse the causal factors behind the behaviour of those individuals involved in the detainee abuse at Abu Ghraib prison and the death of Baha Mousa. The case studies have been selected due to their similar circumstances; they involved western forces operating in the same location in a post-war environment, undertaking counter-insurgency operations and the crimes committed are very similar. Therefore, they are comparable in terms of identifying lessons. The core elements of military culture have been considered to determine whether culture influenced the actions of those individuals involved and if so, how.

The recommendations of the official investigations were reviewed to consider whether sufficient action has been taken to address the causal and cultural issues to minimise the occurrence of repeat incidences by UK forces to an 'irreducible minimum'.[8] The focus is on the UK recommendations against more recent examples of unacceptable behaviour to identify what more needs to be done and how considering the impact of culture will help.

The paper will conclude that the notorious human rights violations in Iraq in 2003 were not specifically a case of bad apples, that there was a range of factors that affected the actions of those involved, including military culture. For the British military to learn the lessons of the past, it needs to move away from its reliance on the bad apple analogy and review how best to reinforce positive cultural traits to reinforce the military's core values.

Methodology

The situational approach is a popular theory amongst psychologists, and it has been used previously to examine war crimes, including the actions of those soldiers working within Abu Ghraib prison. The analytical framework for this research will build on the situational approach

using Philip Zimbardo's Stanford Prison Experiment, a landmark psychological study of the human response to captivity. Stanley Milgram had identified in the 1960s that ordinary people were likely to follow orders given by an authoritative figure, even if the orders were unethical or illegal. He contended that obedience to authority is ingrained in everyone[9] and therefore, individuals could be influenced by situations they find themselves in. The Stanford Prison Experiment developed Milgram's studies further and presented the view that systemic and situational factors can impact negatively on the behaviour of individuals,[10] with situational factors being the stronger of the two.

The counterargument to the situational approach is the more traditional view that some individuals have a disposition to behave in a certain way, that specific character traits can explain acts of good or evil. Advocates of what is referred to as the interactionist approach argue that individuals are capable of influencing a situation, just as a situation can influence the individual.[11] Those who support the interactionist approach offer an alternative perspective on Zimbardo's research; they contend that individuals involved in extreme cases of cruelty have self-selected to join groups that enable such behaviour. This is because such groups will mutually reinforce an individual's preferred qualities and behaviours in some situations.[12] This could imply that certain circumstances, which could lead down a path of violence, are sought by people who have a taste for such behaviour.

Academic studies to date have highlighted that several factors can affect the likelihood of individuals committing atrocities: these include dispositional, situational, systemic and influence of authority, and most likely it could be a combination of factors. The unique culture of the military has often been held responsible as a root cause for military failings, but arguably, it has not been explored thoroughly to examine if culture has a critical influence on immoral behaviour. This paper will examine the concept of military culture before moving on to consider the causal factors behind military human rights violations using these four recognised factors with the additional factor of culture.

Section One - Military Culture

'Military culture is a coat of many colours'[13]

What is Culture?

Most people have an understanding as to what culture is or means. Academically there are over 250 interpretations[14] of culture in existence, but in its most basic form, it is 'the attitudes and behaviour characteristic of a particular social group'.[15] It refers to common ways of understanding an environment, the priorities and values assigned to things in life, along with beliefs, ideas and norms that, subconsciously, are taken for granted. Culture is a group phenomenon and is described by Geert Hofstede as 'the collective programming of the mind that distinguishes the members of one group or category of people from another'.[16] It provides a sense of stability and belonging for its members and is learnt; culture is not something that is inherited.

To help develop the understanding of the subject of culture, Joanne Martin's three perspectives on culture provides a useful means of analysing culture from the macro to the micro level. At the top level, the *Integration Perspective* is where overall, there is a high level of similarity within a group in terms of behaviours, values and assumptions, which glues the group together in a consistent manner. This perspective is a useful method to view a country's Armed Force as a whole in terms of core values and standards as they broadly align with each other.

The *Differentiation Perspective* emphasises the subcultures that exist within a group and that it is this mosaic of subcultures that make up the whole group.[17] This perspective highlights that consensus exists within each subculture and that subcultures may operate in harmony, independently or in conflict with one another. The Differentiation Perspective helps explain the differences between the single Services in the Armed Forces, or the occupations or regiments within each of the services or even the difference between officers, NCOs and enlisted personnel.

The *Fragmentation Perspective* accepts that general frames of reference exist within cultural groupings but focuses on the diversity that exists within these groups. These microcultures are smaller groups that exist within subcultures and are viewed as being in a constant state of flux. The characteristics of this perspective are a 'focus on ambiguity, the complexity of relationships among manifestations, and a multiplicity of interpretations that do not coalesce into a stable consensus.'[18] A military example would be the different cultures that exist between the different types of aircrew in the Royal Air Force.

For this paper, the Integration Perspective is used to provide a broad-brush analysis of the military's culture. This is due to the similarities within the UK's Armed Forces regarding the core values and standards it expects its members to adopt. Subcultures will also be reviewed where appropriate to demonstrate how easily a military unit or group can create its own culture that differentiates from that of the overall organisation and how this could prove to be problematic at the strategic level.

Organisational Culture

Organisational culture is rooted within sociology and is used to refer to the beliefs and attitudes held by individuals about the organisation they work within. Again, there are a range of definitions in existence; common themes involve the configuration of norms, values and beliefs by an organisation's employees alongside the distinctiveness of an organisation being associated with its history, past decisions and past leaders. Gold describes organisational culture as 'a quality of perceived specialness – that it possesses some unusual quality that distinguishes it from others in the field'.[19] This is particularly prevalent for the Armed Forces, who see themselves as different to civilian organisations.

Edgar Schein's work presents the view that organisational culture is a recognisable concept that consists of a set of behavioural or cognitive characteristics. Schein's work is widely

accepted as the framework for the study of organisational behaviour. He developed the concept that three cultural levels - artefacts, espoused values and basic assumptions[20] - exist within most organisations, levels that build upon each other.

Artefacts are visible structures and processes within an organisation. They can be relatively easy to recognise and observe but not always straightforward to decipher. For the military, artefacts would consist of doctrine, standard operating procedures, uniform and language. Such documents should not be taken at face value. Doctrine, intent and instructions are not always complied with, despite publication and promulgation. Therefore, a more in-depth look at an organisation's actual behaviour against artefacts is required to understand a culture fully.

Espoused values are conscious, publicly articulated principles of an organisation. They are usually statements which are reflective of the values, morals and beliefs of an organisation and can foster group cohesion. For the military, these would be the Service's Core Values and Standards or Mission Statements. Core Values are introduced from day one of joining the service and are intended to be entrenched in the very being of all service personnel. Such values will enable the prediction of what people may say and how they should act in a range of situations, but it is not always a guarantor of how they will conduct themselves.

Basic assumptions are the most central part of an organisation's culture. These implicit and unconscious assumptions are known, but are rarely discussed, nor are they written down or easily found. They comprise of unconscious thoughts, beliefs, perceptions, and feelings.[21] They are primarily taken for granted and offer direction and meaning which allows individuals to interpret events. As they are seldom discussed or dealt with openly, they are difficult to address or change.

Leadership plays an integral feature when it comes to organisational culture. Culture begins with leaders; it is their values and assumptions that are imposed on a group and can have a lasting impact. It is a leader's responsibility to shape and reinforce an organisation's culture and ensure that it is in line with the core values. The actions of leaders, such as how they treat their subordinates, the management of underperformance and the rituals they follow can all be classed as artefacts and are a powerful means of sending messages to the organisation's members.

Organisational culture is an asset.[22] It defines appropriate behaviour and reinforces the values held by an organisation. It provides its members with a sense of identity[23] which can foster social cohesion and consensus; this, in turn, can help reduce conflict. The ability to promote a consistent perspective means culture can also enable command and control over the organisation's members, that norms of behaviour are agreed, accepted and conformed to. Culture is a powerful means of influencing how individuals interpret their surroundings, what is important and what is considered acceptable. In turn, this simplifies choices and enables rational action that accords with the organisation's values and beliefs. Organisational culture

can also prove to be a valuable motivational tool; when employees adopt and identify with the organisation's values and objectives, they are likely to feel appreciated, secure and therefore more motivated. All of the above creates a positive working environment that can also help provide a competitive advantage in terms of effectiveness, motivation and consistency.[24]

Organisational Culture brings with it risks if not monitored and managed. There are times where shared beliefs and assumptions can clash with the needs of the organisation, such as people acting in unacceptable ways as per the cases of Abu Ghraib and Baha Mousa. In instances where it has been recognised that a culture needs to change, it can be hard to implement. The main challenge lies with shifting basic assumptions, the deepest level of culture that is ingrained and as already discussed, rarely confronted. To successfully change a culture, all three of Schein's levels should be targeted; artefacts are the easiest to confront but adapting just these will not be sufficient to change a culture completely. Values need to be reinforced, and basic assumptions and norms unlearnt and replaced with new ones. In later sections, an assessment will be made of the level of cultural change within the UK military that was required post the events in Iraq that led to the death of Baha Mousa and how successful it has been.

Military Culture

The military has long attracted attention as being one of the more unusual organisations in existence. Several aspects of the military differentiate it from general society; even Clausewitz captured what he viewed as core elements of a military's culture. While he did not use the term culture, he recognised that soldiers saw themselves as members of a guild, defined by regulations, laws and customs.[25] The observable differences between the military and other organisations include the emphasis on the importance of hierarchies along with rules and regulations, the acceptance of discipline[26] and the degree to which the military has control over the lives of its individuals.

The military can be described as being a specific occupational culture.[27] This is where culture is impacted equally by both values and practises, unlike national culture which is influenced more by values, and organisational culture which is influenced more by practices.[28] Those within an occupational culture tend to be engaged in the same type of work, have a shared set of values and norms which often extend beyond the workplace and their social relationships merge the boundaries of work and leisure.[29] The close proximity many people live in and the encouragement to socialise with one another coupled with the inclusion of an individual's family encourages the creation of an occupational culture or, as some may argue, an institution.[30] Occupational culture is frequently given as an explanation as to why different militaries can work well together despite having different national cultures.

Work undertaken by Joseph Soeters in 1998 to analyse military culture against Hofstede's five dimensions of culture demonstrated that there is an international military culture, which when 'compared to business is relatively bureaucratic and institutional.'[31] His work demonstrated

that collectively, the military yielded higher scores regarding power distance and lower scores relating to individualism when compared to the civilian sector. This indicated that in contrast to civilian organisations a 'supranational culture exists',[32] one that is more hierarchy orientated, more collectivistic and less salary driven. Soeters' work also identified that there is a natural cultural heterogeneity between various nations' militaries. That there are identifiable variances between countries concerning what is viewed as important, for example approaches to warfighting and use of technology and doctrine. These differences are reflective of national cultural characteristics and can be mapped against Hofstede's five dimensions.

Soeters' top-level findings agree with the integrated perspective of culture and identify key cultural characteristics that broadly exist across all military forces. James Burk's work has been frequently relied upon to understand what comprises military culture. His model identifies four elements of military culture that can be found within any military force: 'discipline, professional ethos, ceremonies and etiquette, and esprit de corps and cohesion'.[33] His list is not exhaustive, but it is widely agreed that it recognises the fundamental elements of military culture.

Military discipline denotes the orderly conduct of its personnel, it is a means of control to ensure a standard of behaviour, conformity and obedience to authority. Discipline also 'ritualises the violence of war',[34] it authorises those individuals in combat situations to break with standard societal conventions with regards to killing. Discipline is essential within the military to ensure individuals act in accordance with the required standards of behaviour but also within smaller subcultures where the needs of the group are put before those of the individual to enable success.

Professional ethos is a set of normative understandings that define the corporate identity, the code of conduct and the social worth[35] of the organisation and its subcultures. To provide legitimacy, this ethos needs to be recognised by society as a whole. For the military, this is accepted as the management of violence on behalf of the general population, the profession of arms. The nature of conflict also shapes military ethos, alongside the society it serves and the laws to which it is bound. This professional ethos generates a distinctive solidarity among troops and can result in subgroups, such as regiments and corps, bonding over unit identity,[36] an identity and culture that can be different to that of the organisation.

Military ceremonial displays and etiquette are the most easily observed elements of military culture.[37] Examples include the wearing of uniforms, rank and insignia, saluting, ceremonies and emblems, the majority of which date back to historical warfare traditions. Such customs mark a collective identity, distinguishing the military from other organisations and broader society. They are important for culture but play a less direct role in instilling values compared to other core military cultural traits.

Cohesion and esprit de corps relate to morale and the willingness to perform a mission.[38] Cohesion denotes the feelings of identity and comradeship that military personnel hold

towards those in their immediate group or unit, whereas esprit de corps refers to the commitment to the larger military establishment to which an individual belongs.[39] 'Military institutions depend on a level of social cohesion that is matched in few other social groups'.[40] These elements are important as they can impact on loyalty, trust and the unit's effectiveness. Behavioural studies have demonstrated that a cohesive military team is more likely to fight, not for idealism or patriotism, but for each other's well-being. A lack of solidarity is expected to disintegrate a unit and impact on such willingness to fight. The desire to fight becomes stronger if combined with a high sense of belonging, not only to the subculture but to the organisation as a whole.

As discussed, culture is learnt; it is not inherited. For the military, as per the majority of organisations, this is achieved via the process of socialisation. The primary purpose of socialisation is to convey an organisation's core values to its newcomers. For the military, this starts prior to selection when individuals self-select to apply and is heavily reinforced during initial training. Here the recruits are taught and get to observe the culturally accepted beliefs, values and attitudes, all of which impact on behaviour. Therefore, it is essential to set the right culture from the very beginning. Such socialisation gets repeated throughout an individual's military career, when they change jobs or get promoted, there are either further training courses which will provide formal socialisation or opportunities for informal socialisation within the workplace. Informal socialisation usually involves peer-to-peer learning about what is considered to be acceptable, expected and desired. For socialisation to be effective for the military, it is essential that the right values, attitudes and behaviour are espoused to the newcomers to establish the desired culture.

Burk's attributes of military culture go some way to explaining why there can be issues within the military concerning culture. The hierarchical structure of the military means that change or adaption is slow, 'military cultures are like great ocean liners or aircraft carriers; they require an enormous effort to change direction'.[41] This fact, coupled with the vast number of subcultures that need to be influenced means that it can take time and effort to introduce cultural change across all three of Schein's cultural levels.

With regards to discipline, the trait of obeying authority is ingrained from initial training, especially at the more junior level. This makes it difficult to disobey, even when the act prescribed by an authority goes against an individual's conscience or what is ethically right or legal.[42] As Milgram's studies demonstrated, very few people can resist authority. The carrying out of orders can diminish in an individual's mind their responsibility for the act as they are merely complying with the authority. Again, this can prevent individuals from challenging what should be perceived to be wrong, unjust or unethical.

The military is a task-focused, closed organisation, and its members are selected in and socialised to conform to the attitudes, behaviour and values of their group. If a culture is misaligned, it can be difficult to identify the difference between right and wrong when one is

immersed within said culture or subculture. Personality traits such as patriotism and bravery are viewed as desirable within the military. This often encourages overt masculine behaviour amongst its members, therefore stepping outside the norm and challenging the group is often looked down upon and difficult to do. The task-focused approach can also lead to corners being cut if it is deemed that the ends justify the means, that certain actions or behaviours are tolerated if they achieve the desired result. The danger with this is that such undesirable behaviours, if tolerated for long enough, become the norm and the level of standards gradually erodes.

Cohesion can potentially be the biggest menace to culture. From initial training, the importance of teamwork is emphasised and is held in high regard across the military. Methods of bonding and creating team cohesiveness within the military often involve pranks and banter, but this isolates those who are different to the norm. Historically within the military this was females, ethnic minorities or homosexuals. While the military has mainly moved on from sexist, racist and homophobic behaviour, there are still too many examples of exclusion.[43] Team cohesion encourages individuality to be broken down to enable troops to put the needs of the group and the service ahead of their own. This provides a strong need to comply and can make it difficult to challenge or speak out against wrongdoings due to a risk of exclusion. The perceived closing of ranks to protect their peers during the Baha Mousa investigation is one such example of where cohesion is not a positive attribute. Indeed, such cohesion prevented the full truth coming out during initial investigations.

Groupthink can be a barrier to the evolution of culture. Groupthink is where members of a group think or act similarly and can prove to be detrimental to critical thinking.[44] A culture of discipline, obedience to authority and cohesion adds additional challenge when trying to introduce independent thought. Challenges and counter-arguments do not get expressed as they could disrupt team unity. A misconception of invulnerability and unquestioned belief in the group's actions leads to excessive optimism and risk-taking; all which can be highly damaging to an organisation if the wrong decisions are taken or actions carried out.

Section Two - Iraq 2003

'Even if there were no "bad apples" abuse would have been inevitable'[45]

Abu Ghraib

Spring 2004 saw the worldwide publication of leaked photographs of detainee abuse undertaken by American soldiers while serving in Iraq at Abu Ghraib prison. The pictures depicted male and female soldiers forcing Iraqi prisoners to form naked human pyramids, to simulate sexual acts, to stand on boxes with wires attached to their body along with other appalling acts. Public outrage and shock were high, not since the atrocities at My Lai in Vietnam in 1968 had 'Americans felt the need to question the fundamental democracy of American troops in wartime'.[46]

The abuse was reported by just one person, Sergeant Joe Derby, in January 2004. Aware of some of the 'strange' practices taking place at Abu Ghraib such as the shackling of naked detainees, the true extent of the abuse inflicted on the detainees became apparent when he was loaned a CD of photographs by Corporal Charles Graner. For Darby, the sexually explicit images, the beatings and the torture inflicted crossed a line of acceptability, and he chose to do what he felt was morally right over remaining loyal to his colleagues.[47] He sent an anonymous copy of the CD to the Criminal Investigation Department for investigation. His actions ultimately led to the formal investigations into the abuses at Abu Ghraib and other US military detention facilities alongside global scrutiny over US actions. This was the catalyst that instigated significant changes in how detention facilities were run.

The main reports into the abuse at Abu Ghraib were undertaken by Major General Taguba who reviewed the conduct of the 800th Military Police (MP) Brigade and by Lieutenant General Jones and Major General Fay who reviewed the allegations that the 205th Military Intelligence (MI) Brigade was also involved in detainee abuse.[48] There have been at least 11 other official investigations into prisoner abuse post Abu Ghraib[49] to determine the root causes; all identified several similarities. The reports into Abu Ghraib went further than laying the blame at the door of those individuals charged. They highlighted that situational factors at Abu Ghraib along with systemic and leadership failures not only contributed towards the occurrence of the abuses but why they were undiscovered for so long.[50] Information from the official military reports[51] along with analysis undertaken by social psychologists and investigative reporters will be considered to identify the salient factors which can be attributed to the cause of abuse within Abu Ghraib and where culture played a part.

Disposition

Not all individuals behave the same way under the same conditions, as demonstrated by the thousands of military personnel who deployed to Iraq and did not commit abuse towards detainees or the local population. Dispositional factors are those individual characteristics that influence behaviour and actions, such as personality traits and temperament. The military was quick to attribute the blame for the abuse on the soldiers involved; stating that it was the actions of a few rogue soldiers and that there was no evidence of systemic failures or abuse elsewhere. It can be argued that some of the perpetrators involved, such as Corporal Graner, fit the bad apple descriptor. Graner had a history that included accusations of domestic abuse and violence in the workplace. He was identified as the ringleader who not only orchestrated the abuse but photographed it. He 'far exceeded his role in abusing prisoners both physically and psychologically'[52] and through his position in charge of the Tier 1A night shift, he influenced those around him to participate in the degrading treatment of the detainees.

Not everyone involved in the abuses at Abu Ghraib had such a predisposition, but their personality traits left them open to the influence of those around them. Research has identified that most young adults define themselves on the input of people and the structures around them;[53] the military is no exception to this, especially where social conformity is the norm.

Some of those individuals involved were much more susceptible than others to conform due to their vulnerability or lack of resilience.[54] Lynndie England can be categorised as such an individual, working in the prison as a clerk she had no reason to be in Tier 1A and had no authorisation to handle detainees, but the published photographs clearly depict her involvement and apparent amusement at the events she was participating in. A young, uneducated woman, England had embarked on a sexual relationship with Graner, a man superior in rank and age, whose actions heavily influenced her.[55]

The Situation

Based on the work of Milgram and Zimbardo, situational factors have been widely argued as a leading cause for the erosion in moral standards within Abu Ghraib. Situational factors are when an individual's surroundings affect their behaviour, the more powerful or stressful a situation, the higher the behavioural impact. They can include 'the physical environment, other people, social norms or constraints, and other types of physical or social stimuli.'[56] No one situation can adequately explain 'atrocity by situation'.[57] It is usually a combination of issues aligning which result in negative behaviours developing. In the case of Abu Ghraib, several situational factors contributed towards the destructive behaviour of the guards and interrogators.

Those working and living at Abu Ghraib were suffering a range of psychological stressors as a result of their environment. Manning and resource shortages meant the MPs were working 12-hour shifts, seven days a week, living, eating and sleeping within the walls of the filthy prison complex.[58] The prison had an inadequate sewerage system which often backed up, a lack of running water and intermittent electricity. Security was at an all-time high with the overcrowded facility coming under daily mortar attacks along with attacks by prisoners on the guards. All this contributed to the feeling of isolation and powerlessness, creating a pressured environment where the guards rectified such feelings via the exertion of power over the prisoners.

Discipline throughout the prison was poor. Standards of dress deteriorated, and basic military discipline concerning behaviour and the conduct of daily duties was not enforced. The lack of clear rules of engagement, regulations and orders within the prison furthered the lack of discipline. Policies were unclear regarding what interrogation procedures were authorised, creating confusion over the standards that should be applied.

The widespread practice of stripping detainees, which was initially intended to increase feelings of vulnerability and therefore compliance with interrogations, would have had a psychological impact on the guards and interrogators. The frequency of this practice would have normalised the situation within the prison as it had become routine. Routinisation[59] can obscure the relevance of moral principles. The act of depriving the detainees of their clothes would have dehumanised them. Dehumanising removes an individual's human qualities, and they are seen as not having the same values or feelings as others which enables the

rationalisation that normal moral principles and rights do not apply to them increasing the risk of abusive treatment.[60]

The System

For Zimbardo, atrocity by situation is a result of systemic failures.[61] Systemic atrocity is 'caused by structural forces, prior policy choices and institutional constraints'.[62] They can range from the tactics used, to the policies and practises implemented, and can sit from organisational up to state level. Within Abu Ghraib, there were clear systemic failures that contributed towards the immoral actions of those MPs working the Tier 1A night shift. There was confusion over what interrogation techniques had been authorised. This links back to the decision by the Bush Administration that Al-Qaeda and Taliban members were considered to be unlawful combatants, and if captured were not to be considered prisoners of war and provided with the rights as defined in the Geneva Convention.[63] This was exacerbated by the Secretary of Defence authorising interpretations of the Geneva Conventions that purposefully reduced the definitions of torture and enabled a more extensive range of interrogation techniques to be used. This enabled American intelligence organisations to 'conduct interrogations of Iraqis and Afghans in detention using techniques that otherwise would have been deemed violations of the US and international law'.[64] The result was that those within Abu Ghraib had no clear guidance, and therefore, lines of acceptable behaviour became blurred. General Jones noted that had 'doctrine and training been followed, the abuses at Abu Ghraib would not have occurred'.[65]

Visits to Abu Ghraib by influential individuals such as General Miller, Commander Guantanamo Bay, had an impact. Miller recommended more aggressive interrogation techniques be used in Iraqi detention facilities.[66] He influenced the chain of command in Iraq, and within the Department of Defense, to utilise interrogation methods that were 'the proximate cause of the torture and war crimes committed at Abu Ghraib'.[67] The intense pressure imposed on the intelligence community to obtain 'actionable intelligence'[68] resulted in the MI staff encouraging the MPs guarding the prisoners to 'soften up' detainees ahead of interrogation. This undermined the MP's chain of command and distorted the lines between guarding and interrogation. The impact was that some of the MPs overstepped the boundaries of their role, and with it the Geneva Conventions.

The lack of training for 800th MP was a critical factor and was exacerbated by the mobilisation period being rushed. Pre-deployment and in-theatre training on prisoner handling were lacking along with instruction on the Geneva Conventions. This was partly a result of an unclear mission for 800th MP and an extended tour once deployed. It resulted in a brigade that was inadequately trained and therefore reliant upon individuals who had civilian corrections experience,[69] unfortunately, Corporal Graner was one such individual.

Leadership

The investigations into Abu Ghraib highlight that the lack of leadership – from the Brigade Commander who was viewed as rarely there, to the ineffective Battalion Commander –

exacerbated the problems within Abu Ghraib. There was no oversight of what individuals were doing and no appreciation of the pressures facing the guards and interrogators. Along with a lack of leadership came ambiguity over the chain of command. The ongoing dispute between 800th MP and 205th MI over who was in charge further aggravated the situation. It caused confusion, reduced accountability and created an ambiguous environment where troops started to take matters into their own hands, and without restrictions or reprimands, their behaviour deteriorated well below the accepted standard.

Culture

With regards to discipline and culture, Milgram's obedience studies helps explain how the military culture of discipline played a part in the Abu Ghraib atrocities. From initial training onwards, military personnel are socialised to obey orders and not to challenge superiors. At the same time, the individual starts to adopt the routine, habits and behaviours of their peers; they begin to conform to the military system.[70] This intrinsic action to obey authority, especially within a hierarchical environment such as the military can have a negative impact on moral behaviour as individuals focus on compliance and can fail to recognise or accept that moral or ethical principles are being violated,[71] which is what happened within Abu Ghraib.

There is evidence of obedience to authority concerning the 'softening up' of the detainees at the request of the interrogators. At no point did personnel question whether the orders were reasonable; the individuals involved believed their actions were serving a military purpose.[72] The guards involved conformed to the actions of others, especially ringleaders such as Graner, and participated in the infliction of abuse to those detainees under their care.

To recap, professional ethos is the set of understandings which help define corporate identity and code of conduct. The personality traits of bravery and patriotism are viewed as desirable and can often contribute towards the creation of a masculine environment. Within Abu Ghraib, the culture was overtly masculine. The humiliation of the detainees via the removal of clothing, the forced wearing of women's underwear and sexual degradation in front of female guards reinforced the masculine environment. Such an environment would have impacted on the behaviour of others, such as the actions of those women who participated in the abuse at Abu Ghraib, they are likely to have joined in 'in order to gain the hoped-for reward of male acceptance'.[73]

The culture of a close team can result in people losing their sense of individual identity; it is known as deindividuation. This group mentality can result in individuals partaking in behaviour that does not accord with their personal standards.[74] Individuals, such as Staff Sergeant Frederick,[75] acknowledged in subsequent investigations that their behaviour had fallen well below that of their usual individual standards.

Baha Mousa

On 15 September 2003, an Iraqi hotel receptionist, Baha Daoud Salim Mousa, died while in

custody at a British Army detention facility in Basra. The inquiry into his death identified that not only had he been subjected to numerous assaults over the 36-hour period he was in British custody,[76] practices banned by law such as hooding, sleep deprivation and stress positions had been inflicted upon him and his fellow detainees. These actions resulted in the condemnation of the Ministry of Defence (MOD) for corporate failure and of the regiment involved for a 'loss of discipline and lack of moral courage.'[77]

On 14 September 2003, the 1st Queen's Lancashire Regiment (1QLR) participated in Operation Salerno, a raid on hotels in Basra looking for former regime loyalists. Their search of Hotel Ibn Al Haitham uncovered weapons, ammunition and forged identity documents.[78] Seven men, including Baha Mousa, were arrested on suspicion of being former regime loyalists. They were taken to the Battlegroup's Headquarters where they were detained in the Temporary Detention Facility (TDF) and tactically questioned before being transferred to the Theatre Internment Facility (TIF). During their detention, the men were hooded, forced to remain in stress positions and repeatedly assaulted. On the night of the 15 September, Baha Mousa stopped breathing, and despite the efforts of the medical team, he was pronounced dead. The post-mortem attributed the cause of death to postural asphyxiation but also identified 93 separate surface injuries that had been inflicted.[79] Examination of the prisoners when they arrived at the TIF showed that a number of them had been subject to severe assaults, one was on the verge of fatal kidney failure as a result of his mistreatment within the TDF.[80]

Seven individuals were tried at Court Martial in September 2006 in relation to Baha Mousa's death. One individual, Corporal Donald Payne, pleaded guilty to a charge of inhuman treatment and 'became the first British soldier convicted of a War Crime under the International Criminal Court Act'.[81] He pleaded not guilty to the other charges of manslaughter and perverting the course of justice, as did the other defendants in relation to their charges of inhuman treatment or negligence. All remaining charges were either dismissed or individuals were found not guilty. The Judge Advocate acknowledged that Baha Mousa's injuries were the result of numerous assaults sustained during his time in British custody, but charges could not be brought due to a lack of evidence 'as a result of an obvious closing of ranks'.[82]

The death of Baha Mousa was reviewed in 2008 after the UK Government announced that a public inquiry into his death would be held.[83] This was a result of the relatives of six Iraqi civilians who had been killed by UK forces bringing a case against the Secretary of State for Defence seeking a review into the Government's decision not to conduct independent inquiries into the deaths of these men. Prior to this decision, the Army had decreed in 2005 that they would investigate what measures in light of the allegations of abuse in Iraq were required to improve the Army's operational effectiveness. This investigation was tasked to Brigadier Aitken and his report was eventually published in 2008. This case study will use the Aitken Report and the Baha Mousa Public Inquiry, along with academic literature, to identify the main factors that led to the committal of abuse and identifying where culture played a part.

Disposition

As per the Abu Ghraib case study, some individuals, such as Corporal Payne, were instrumental in the mistreatment of Baha Mousa and inflicted abuse for their personal gratification and amusement.[84] The Public Inquiry labelled Payne as a 'violent bully'.[85] Payne was in direct charge of the TDF and in a position of responsibility not just due to his rank but his position as a provost Corporal. He was personally responsible for many of the assaults that occurred and set an appalling example to those junior soldiers around him.[86] Payne admitted to the inhuman treatment of a person protected under the provisions of the Geneva Convention, most likely because a recording of such treatment was presented to the Court Martial. In the subsequent Public Inquiry, he admitted to not presenting the whole truth at Court Martial and that he had used gratuitous violence.[87]

As per Abu Ghraib, some individuals were influenced by Payne to participate in the abuse, and like him, inflicted abuse for their own gratification. There were also a range of individuals highlighted who saw the abuse and failed to stop or report it, and those who should have known based on their visits to the TDF or the proximity of their living quarters. These individuals included the Padre, the Commanding Officer and other officers. Their lack of action to report or prevent the actions of others effectively condoned a 'culture of strategic humiliation and torture'[88] within the TDF. Within 1QLR, there were some individuals with the disposition to inflict abuse for their gratification, a culture that tolerated it, and personnel lacking in moral courage to intervene or report the actions of others.

The Situation

The situation 1QLR found themselves in when they arrived in theatre was complex and dangerous. In Basra, the judicial system had collapsed, crime was rising, as was the threat of insurgency. The local population were increasingly frustrated with a lack of progress since the removal of Saddam Hussein and tensions were running high. 1QLR were responsible for conducting peace support operations in an increasingly hostile and pressurised environment. The stressful conditions were intensified by the high temperatures of over 50 degrees centigrade, the 18-hour working days and the recent deaths of colleagues at the hands of insurgents. Capacity was also overstretched due to an insufficient number of troops required for the role.[89] This created a melting pot of fatigued, overworked soldiers who felt under constant threat of danger. It should have been evident to the chain of command that something untoward could occur if there were no checks or balances in place to ensure discipline and good order.

There was evidence of a loss of discipline within the Battlegroup. Record keeping was poor; detainees were regularly held longer than the regulations stated prior to transfer to the TIF, there was no guard rota and most importantly, little supervision. 1QLR did not have full control of its personnel, nor was it enforcing order. This is likely to have been caused by their situation; they were operating at maximum capacity, under pressure, and with a reduction in standards. When reviewing the events that took place within the TDF, the number of individuals, the ranks

involved and the flagrant disregard of the consequences of being caught, it is easy to identify the grave breakdown in military discipline. These warning signs existed before Operation Salerna and had they been acted upon by the chain of command, the events of the 14-16 September may have been prevented.

The System

Systemic failures can be identified as a cause of the abuse. The guards and tactical interrogators were using conditioning and interrogation techniques that had been banned in 1972 by the then Prime Minister, Sir Edward Heath.[90] To add further weight, the European Court of Human Rights confirmed in 1978 that the interrogation techniques of hooding, stress positions, subjection to noise, sleep deprivation and deprivation of food and drink were a breach of Article 3 of the European Convention on Human Rights. Somehow, the UK military had forgotten about the ban, and doctrine published after the 1972 decision regarding interrogation failed to identify the banned techniques. This failure allowed for soldiers to unknowingly carry out illegal conditioning techniques on civilian detainees.

Interrogation training and Conduct-after-Capture training are likely to have cross-contaminated what behaviour was required of British soldiers undertaking interrogation, and the treatment British soldiers could expect if they were captured. Those individuals who had completed Conduct-after-Capture Training were qualified to conduct interrogation and tactical questioning, despite only receiving training on the illegal interrogation methods they could be subject to if captured.[91] The differentiation was not made clear, therefore personnel deployed ignorant over a significant policy issue. This filtered into the brigades and with the increasing reliance on the Battlegroups to undertake tactical questioning ahead of transferring detainees meant that lines of responsibility were blurred between guarding and interrogation. This was exacerbated by 1QLR's 'significant error of judgement'[92] in allowing those soldiers who had arrested Iraqi civilians to then be responsible for not only guarding but also 'conditioning' them.

Conditioning describes the techniques applied to detainees to prolong or enhance the feeling of the shock of capture before they were interrogated; it was believed that it would help obtain information. The Inquiry identified that the legal practice of conditioning was far too ambiguous and could range from the guards not fraternising with the detainees, which is legal, to the use of coercive techniques such as the five banned techniques, which are unlawful.[93] The systemic failure to identify what conditioning techniques were and were not acceptable enabled individuals to step outside the boundaries, again made worse by 1QLR using the guards to implement conditioning without any direction or supervision.

1QLR deployed to Iraq with five weeks' notice and as a result, were unable to undertake the full pre-deployment training package nor did they have the full complement of specialists deploying with them, such as tactical questioners.[94] Training on the treatment of civilian detainees was scant as the focus of the pre-deployment training was based on a war scenario, so concentrated on handling prisoners of war[95] which would have misled the members of

1QLR as they were undertaking peace support operations and predominantly dealing with Iraqi civilians.

Leadership

The lack of experience impacted on the leadership within the regiment. The Inquiry found Junior Officers responsible of turning a blind eye to misconduct and breaches of discipline, that more experienced officers failed to acknowledge the deteriorating conditions within the TDF and that there was a complete abdication when it came to the welfare of the detainees.[96] The Commanding Officer, Lieutenant Colonel Mendonça, while found not guilty of his charge of negligently performing a duty, does bear a great deal of responsibility for the events that happened.[97] His leadership was regarded as robust with a low tolerance towards ill-discipline. This command style could have made him difficult to approach, hence his lack of awareness of previous cases of violence prior to Operation Salerna. Something as a commander, he should have been aware of. Mendonça 'had a non-delegable responsibility to ensure that detainees were treated humanely'.[98] He did not give enough due diligence to this responsibility; he failed to acknowledge the unethical practices being implemented and he failed to appreciate the risk given the situational pressures his soldiers were facing on a daily basis. Mendonça was awarded the Distinguished Service Order (DSO) for his leadership, bravery and successes during this tour. While this paper does not discredit his successes, it does pertain that his leadership was lacking in some critical areas. This lack of leadership, across all levels of the Battlegroup, contributed to the death of Baha Mousa.

Culture

As per Abu Ghraib there was evidence of a culture of obedience to authority. The soldiers undertaking guard duty undertook to condition the detainees at the request of the 1QLR intelligence staff; their actions to complete this task crossed the line of acceptable behaviour. The military's hierarchical structure and enforcement of discipline to obey orders would have made it very difficult, especially for the junior soldiers, to stand up to their chain of command, some of whom have been identified in the official investigations as intimidating characters.

As already suggested, cohesion is one of the greatest dangers to culture. Payne admitted to not telling the truth at the Court Martial, and that he sought to persuade others to say the death was accidental when he knew it was not.[99] Such misguided loyalty could be a result of military culture and the importance placed on cohesion. It prevented the truth about Baha Mousa and his fellow detainees coming out. The need to fit in and be part of the team would have intensified the pressures on each soldier to gain acceptance from those more dominant members,[100] such as Payne, and would have prevented individuals standing up to them or reporting them.

The culture of group loyalty can often override emotions that should constrain criminal behaviour, emotions such as guilt, anxiety or fear.[101] Loyalty to the group proved to be stronger than any moral emotion; 19 members of 1QLR assaulted Baha Mousa and his fellow detainees,

'in the middle of the Battlegroup's main camp, in a building with no doors, apparently with little regard for the consequences of being caught'.[102]

This section has identified that there was a range of factors that resulted in the committal of atrocities at Abu Ghraib and within 1QLR's TDF. It has established that military culture was one of these factors, that culture facilitated the actions of individuals to participate with their peers and prevented the abuses being reported and stopped. The next section reviews the lessons identified in the official investigations and assesses whether they were sufficient to prevent further human rights violations from being committed and if there is more than could be done.

Section Three - Lessons Learnt?

'If the British Armed Forces are not assiduous in complying with the laws of armed conflict and international humanitarian law, they would become no better than the insurgents and terrorists they are fighting' [103]

Both case studies are incredibly alike in respect to the behaviour displayed and the factors that influenced the actions of those involved. Unsurprisingly, the areas identified to be addressed by the official investigations were very similar. In addition to the tactical recommendations in relation to the handling of detainees and detention facilities, the recommendations can be categorised broadly under four categories: training on detainee handling and generic training on the Law of Armed Conflict (LOAC); reviews of doctrine and policy; addressing leadership shortcomings and the recognition that systemic issues played a role. There were no recommendations surrounding cultural changes required. The reports' recommendations were either intended to immediately improve the situation in Iraq in relation to detainee handling or to minimise the occurrence of repeat incidents. This section will focus on the UK and what progress has been made to reduce the likelihood of repeat incidents.

The Aitken Report provided the MOD with a summary of the areas for improvement and detailed what changes had been made to doctrine, policy and training. It did not assess whether these changes had been successful, nor could it consider the Baha Mousa Inquiry recommendations as they had yet to be published. Aitken reported that 'the number of allegations of abuse in Iraq had been tiny'[104] and that it was likely that there would be an absence of further incidents due to the 'wide range of corrective measures'[105] implemented since 2003 so it would be unwise to make radical changes unless there was 'clear evidence that the faults we were seeking to rectify were endemic'.[106] His report focused on the bad apple explanation that the institution was working well with appropriate values and internal dynamics. That nothing needed to be reviewed or reformed in relation to the functioning of the organisation, that the punishment or removal of those individuals who had not played by the rules was sufficient.[107]

A key takeaway from the reports into Abu Ghraib and Baha Mousa is that the majority of the recommendations and changes made across the UK's Armed Forces only focused on Schein's

outer layer of culture – the artefacts – items such as doctrine, procedures and policy. Such changes should have made systemic improvements, but they would not have been powerful enough to address the deeper cultural layers that impact on cultural change.

If Aitken's view was correct and the recommendations in the Baha Mousa Inquiry were implemented, it would be fair to conclude that the military had learnt its lessons and there would be an absence of repeat incidents. This paper argues that this was not the case, that lessons and recommendations from the UK and US investigations such as revised training packages and updated doctrine were not sufficient. That the changes introduced were insufficient to prevent the unlawful killing of an injured Afghan insurgent by a Royal Marine Sergeant in September 2011. That the lessons did not prevent a Royal Marine Captain and his Sergeant from assaulting an Afghan detainee suspected of planting a roadside bomb in 2009.[108] The recommendations and worldwide outrage at the treatment of detainees at Abu Ghraib did not prevent members of the US Marine Corps raping a 15-year-old girl before murdering her and her family in Mahmudiya, Iraq in March 2006[109] or the premeditated murders of Afghan civilians by the US Army in the Maywand District in 2011.[110]

Such examples demonstrate that the military had failed to appreciate all of the factors that caused the immoral behaviour, such as culture, and that it failed to implement sufficient measures in relation to situational and systemic shortcomings to prevent repeat occurrences. A review into the case of Marine A will examine the factors that resulted in him unlawfully killing an Afghan insurgent to identify what lessons were missed or not implemented. Culture was identified in the previous section as being a factor that led to the atrocities being committed in Iraq, but it was not considered in the official reports, nor were there any recommendations made to review or address military cultural shortcomings.

Marine A

In October 2013 Marine A, identified as Sergeant Alexander Blackman, was found guilty at a Court Martial of the murder of an Afghan insurgent in September 2011; he was sentenced to life imprisonment with a minimum term of ten years. This sentence was reduced to seven years after an appeal in February 2017 reduced the charge to manslaughter by reason of diminished responsibility.[111] Blackman's actions were discovered on a recording made by a member of his patrol two years after the event and only came to light via a separate police investigation. The video footage showed Blackman and his patrol mishandle the injured insurgent, move him out of sight of the ground surveillance systems, discuss whether to administer first aid before Blackman shot the insurgent point blank in the chest saying to his patrol, *obviously this doesn't go anywhere fellas, I've just broken the Geneva Convention*.[112] Blackman knew that his actions were illegal, yet he did it anyway. Was this a case of a bad apple or were there similar factors as per the previous case studies that impacted upon Blackman's actions?

Examination of Blackman's Court Martial reports, the subsequent Court of Appeals documents, and the Royal Navy's Telemeter Report[113] identifies similar causative factors as had been

identified in the case studies of Abu Ghraib and Baha Mousa, suggesting that the military had not yet learnt its lessons.

In terms of situational factors, there are stark similarities to both Abu Ghraib and Baha Mousa. Blackman and the marines under his command were based at a remote and isolated checkpoint. The checkpoint was under constant enemy threat and was physically insecure, leaving its personnel feeling vulnerable to attack. This feeling was heightened after the deaths of colleagues whilst on patrol. The checkpoint was undermanned, and as a result, those based there were working increased hours, patrolling for up to ten hours a day in high temperatures with a threat of ambushes and IED attacks. The marines were combat weary and sleep deprived.[114] The failure to recognise the impact of situational factors post 2003's events contributed towards the loss of rational decision-making by Blackman and his multiple which resulted in the unlawful killing of the Afghan insurgent.

Blackman and his personnel were also let down by systemic failures. The importance of suitable and sufficient training had been identified in the Aitken Report. Despite this, Blackman had not received the full pre-deployment training package but was allowed to deploy. The benefits of support mechanisms, such as Trauma Risk Management (TRiM), introduced to alleviate the stresses of traumatic events and support psychological wellbeing had not been recognised by 42 Commando as essential. There were no TRiM practitioners within Blackman's checkpoint for the majority of his operational tour, nor had the checkpoint received any welfare visits from key individuals such as the Padre. The failure at the operational level to address systemic lessons resulted in the welfare and psychological condition of Blackman and those under his command going relatively unchecked during the duration of a challenging tour, allowing them to go 'feral'.[115]

In terms of leadership factors and failures, the lessons from Abu Ghraib and Baha Mousa regarding the influence and impact of leadership, or lack of it, had not been learnt. The leadership of Blackman's chain of command came under criticism for a lack of supervision.[116] This resulted in the warning signs of stress, fatigue and strain not being picked up on.[117] Blackman's 'poor leadership'[118] went unnoticed and therefore was not rectified; it was his leadership shortcomings that resulted in those under his command treating the insurgent in the inhuman manner in which they did.[119]

Culture was, again, a causative factor. The culture within the checkpoint and 42 Commando during Herrick 14 played a significant factor in the actions of Blackman and his subordinates. Anthony King identified in *Frontline* that groups often coalesce around unit identity and that overdeveloped regimental identities can become problematic, generating 'deviant forms of practice and solidarity'.[120] The approach undertaken by 42 Commando was perceived by others to be overly aggressive when compared to other units operating within Task Force Helmand at the same time.[121] This culture had been challenged by a fellow Royal Marine, but the chain of command had not viewed the concerns as significant enough to require any action. Such a

culture and the manner in which they were permitted to operate increased the chances of wrongdoing taking place.

This aggressive culture is likely to have dehumanised the local Afghans along with the insurgents living and operating around them. This would have unwittingly condoned the contemptuous treatment of Afghans, as was demonstrated in the audio of the video footage in the handling of the insurgent, the reluctance to apply first aid and the discussion to kill him.[122] An aggressive culture would have impacted on the extremely difficult challenge that faces all military personnel when in combat situations, that of stopping fighting and applying restraint in order to comply with the LOAC, Geneva Conventions and the military's core values and standards.

As per the previous case studies, the military's culture of obedience to authority was a factor. Blackman's authority and position of leadership at the checkpoint heavily influenced the behaviour of his patrol members.[123] None of them questioned or challenged his behaviour. Cohesion also played a part. Not only did they not challenge him, but they also colluded to cover up the event, and nobody subsequently thought his actions were severe enough to report it. In the Court Martial video evidence, members of his patrol can be heard to agree that Backman's actions would not go any further and proposing that the shot, if questioned, was a warning shot.[124]

At no point did it seem that Blackman or his patrol consider that their actions did not comply with core values and standards expected of a Commando. They had placed the culture of loyalty to their comrades over core values, which on this occasion led to behaviour which broke values and standards, along with regulations and laws. The training in LOAC had been implemented, Blackman clearly knew he had broken the Geneva Convention but either the training was not robust enough, or the culture was so misaligned with the military ethical standards expected, that there was no safety net in place to stop Blackman losing his self-control on that day in Helmand.

Until the Telemeter report, none of the reviews and subsequent recommendations explicitly mentioned culture; therefore, nothing had specifically been considered regarding how culture played a part or how to best address any shortcomings in this area. The Telemeter report recognised that the training at the time did not identify how situational factors can undermine regulations and morals. It highlighted the need to instil a deep understanding of values and standards to enable these principles to be applied when under the stress of operations.[125] Project Lovat was the Royal Marines response to the Telemeter findings. It sought to identify and develop improvements in performance against a 'Recruit, Train, Live' framework. This involved a review of existing training and identified the requirement for specific formal ethics training at all levels, primarily focusing on leadership from Lance Corporal upwards. The Royal Marines have identified the benefit of better equipping its personnel with regards to ethics training and the benefits it brings. They have introduced a range of methods to

educate personnel on how situational and systemic pressures can impact decision making and behaviour, including the use of field exercise scenarios to best prepare their personnel to make ethical decisions under all situations.[126] The positive action taken by the Royal Marines will better equip their personnel with the understanding and skills to combat against 'ethical drift', both in peacetime and on operations and should be considered by all services with field forces.

Leadership Implications

When taking into consideration the causal and cultural factors that led to the mistreatment of detainees in Iraq in 2003, along with the more recent examples of human rights violations, it is clear that more can be done by the military to minimise the chance of repeat occurrences in the future. There is a need for the military and its leaders to better appreciate how not only dispositional, situational, systemic and leadership factors impact on the behaviours of the individual and the group but also the impact of culture.

The argument that the bad apple cannot be prevented, that there are individuals with a disposition to commit crime whatever the circumstances,[127] is valid to a degree. However, the commander has the ability to influence all those under their command and create the conditions which mitigates such events. This paper agrees that 'it is not possible for any organisation to prevent criminal activity or disgraceful behaviour absolutely. It is, however, possible to create the conditions which make the commission of criminal or disgraceful acts less likely.'[128] At a tactical level, commanders should be able to identify problem characters and deal with them. This can be achieved by establishing the right unit culture, one that supports 'positive and ethical behaviours…as well as to quickly and effectively address any negative or unethical practices'.[129] Instilling discipline and setting the standards personnel are expected to adhere to provides 'a unit with a strong sense of professionalism and discipline [which] would…be less likely to commit infractions. This is because the individuals are invested in an identity which has components of self-discipline and ethics embedded in it'.[130]

Many situational factors are, to a degree, out of the hands of commanders such as the operational tempo or enemy actions. The military must remain cognisant that 'rarely can commanders make a significant impact on the situation, yet they can shape the system so individuals who are part of it are better prepared to deal with situational forces'.[131] Commanders cannot eliminate the fear of an enemy attack but what they can do is ensure they are aware of the pressures that affect their personnel and prepare them for it as best as possible to increase their mental and physical resilience. Training, education and communication go a long way in ensuring personnel have the right mind-set to cope and ability to adapt to the pressures, the uncertainties and complexities of the situations they find themselves in. At the strategic level, the military needs to recognise the lessons of under resourcing, inadequate planning and stressful situations to ensure that their personnel are better supported, which in turn reduces the probability of individuals acting irrationally.

To prevent systemic factors undermining the standards and behaviour of the Armed Forces, the military needs to better recognise the challenges that its personnel face when operating in complex situations. In roles outside of traditional warfighting, the rules are not always as clear and 'the moral (and criminal) code can become opaque'.[132] By recognising that the ill-treatment, and in the most shocking cases 'the intentional killing of those detained by the armed forces in some form of military custody is one of the most common forms of military misconduct',[133] more robust countermeasures can be introduced to prevent this.

The investigations identified that more task specific and better generic training was required and as such training has been updated accordingly. Effective training including education via practical scenarios will help, as personnel 'are less likely to commit war crimes when they are trained in the law of war, understand that anyone who commits violations is a criminal and will be prosecuted, and realise that compliance benefits mission accomplishment'.[134] Although, as the case of Blackman has demonstrated, the military needs to remain cognisant that training alone is insufficient to prevent misconduct. Reinforcement of training, values and standards by those in a position of responsibility to provide guidance and set the culture is required to further mitigate against misconduct occurring.

All three case studies demonstrated that leadership styles influence the culture of an organisation. 'Many factors influence military success, but the quality of leadership is one of the most crucial'.[135] Mendonça's robust approach had unwittingly resulted in his subordinates taking an overly robust approach with detainees.[136] 42 Commando taking an aggressive approach affected the actions of Blackman and his multiple and undermined the Commando's core values. Schein identified that 'leaders are the primary agents by which an organisation's culture and role norms are modelled, transmitted, and maintained'.[137] Leadership has a significant impact on culture, leaders play a critical role with regards to cultural reinforcement and change. The military must endeavour to increase the awareness of this via training and education to ensure commanders and military organisations use culture to their advantage to ingrain the military's core values and standards.

Military commanders have not only an ethical obligation to lead morally, but also a legal obligation. Article 28 of the Rome Statute of the International Criminal Court defines the legal responsibilities of commanders and superiors with relation to the committal of war crimes.[138] It holds the chain of command responsible with regards to the neglect of duty in relation to war crimes that they knew their subordinates were committing or within reason that they should have known about it.[139] While the commanders of Abu Ghraib prison, 1QLR and 42 Commando did not 'commit, incite or order subordinates to commit LOAC or IHL violations',[140] their lack of awareness of events could have seen them being held responsible for war crimes, due to a failure of exercising 'effective control'.[141]

The military needs to be attuned to the fact that culture does play a part in the committal of misconduct, and without the monitoring and understanding of a unit's cultural identity it

could happen again. The military and its leaders need to remain mindful of the weaknesses of military culture (and subcultures) and how this can undermine the reputation of the Armed Forces. The values placed on the virtues of loyalty, discipline and team cohesion can be the very things that create destruction and bind individuals into doing wrong.[142]

The ability to cultivate group identity within subcultures is important, but commanders must ensure it is balanced alongside respect for the military's authority and the rule of law[143] to ensure that it does not fragment from the organisation's core values. The military needs to facilitate an environment that enables the use and acceptance of reasonable challenge[144] across all levels of the organisation, from the tactical to strategic. This needs to start at initial training and be reinforced throughout an individual's career. An environment is required where cohesion facilitates the challenge of a colleague before they make a mistake vice helping cover up for them after the event. The virtue of moral courage needs to be given greater importance across all ranks, which will help prevent future abuses from being committed.

Group or peer pressure within the military can stem from cohesion and 'by the nature of the organisation [is] stronger than in comparable civilian occupations'.[145] Cohesion brings great benefits to effectiveness, but it can also present a great risk. The perceived closing of ranks to protect their peers during the Baha Mousa investigation is one such example of where cohesion was not a positive attribute. 'There is an inherent difficulty in exposing criminality or wrong-doing that takes place within a tightly knit institution such as the Armed Forces. Solidarity, stigma and fear naturally disinclines soldiers from testifying against comrades'.[146] Analysis of the case studies demonstrates that in instances of military misconduct individuals are unlikely to act alone, that individuals follow and conform to the norms of behaviour set by their group. The military needs to encourage esprit de corps and cohesion but also identify better mechanisms to encourage the reporting of wrongdoing. Individuals need to understand that they have a duty to inform of immoral activity and the military leadership needs to recognise that the barrier to doing so can be that such behaviour is 'at odds with an institution characterised by respect for authority, duty, and loyalty'.[147]

In order to reduce the likelihood of breaches of acceptable behaviour, the military has more to do. By recognising the range of factors that affect the actions of its individuals it can take practical steps to reinforce the standards of behaviour accepted, the core values and the rules and regulations that are required to be followed. Leadership has a pivotal role to play, in not just managing the situation but setting and influencing the organisation's culture. Culture plays a crucial role in the operational effectiveness and behaviour of the members of the military. This needs to be recognised, especially when personnel are operating under pressure, to ensure that the organisation's core values and standards are adhered to.

Conclusion

'Exemplary behaviour may be more common than the opposite, but even the slightest abuse of military power can have a catastrophic strategic effect' [148]

The purpose of this research was to examine whether military culture was a key influence in the committal of human rights violations in Iraq in 2003 and if the military has learnt its lessons. The case studies of Abu Ghraib and the death of Baha Mousa were selected due to their high profile and as sufficient time has passed to analyse whether the UK military has learnt from these incidents and sufficient measures have been introduced to reduce the probability of repeat incidents. This paper has demonstrated that culture was a key influence and that there is more that could be done in this field with regards to learning lessons from these events.

The examination of military culture identified the advantages culture offers such as teamwork, loyalty and discipline. However, at the same time, if allowed to fragment away from the organisation's core values and standards, these same traits can create issues and weaknesses, especially concerning conduct and behaviour.

The examination of dispositional, situational, systemic, leadership and cultural factors provided explanations for the causes of misconduct in the case studies. The evaluation of the literature on these incidents also demonstrated that no one single factor could sufficiently account for why the misconduct occurred, but collectively they could provide a comprehensive explanation for the drop in values and standards of those involved.

The official reports and inquiries into Abu Ghraib and Baha Mousa identified a stark number of similarities suggesting that the factors that caused such misconduct could also be prevalent in other cases of human rights violations. Therefore, there are still valuable lessons to take from these case studies. This was demonstrated via the examination of an additional case study, that of Sergeant Blackman, where similar causal factors were again identified. Analysis of the Blackman case identified that the lessons implemented post Iraq 2003 did not address cultural issues such as cohesion, loyalty and ethical approaches. This was a result of the failure to identify culture as a key influence on the behaviour of those involved. Training and changes to doctrine inadvertently addressed the outer layer of culture but were not sufficient to challenge and address the inappropriate values and assumptions held by some military personnel. The work undertaken post the Blackman trial by the Royal Marines has identified the importance of setting the right culture at the very start and throughout an individual's career to help protect against human rights violations and other similar ethical shortcomings.

Efforts have been made to learn from these case studies, and positive steps have been taken since 2003 but there is scope for more to be done and the military should not become complacent that this matter has been addressed. The reliance on the bad apple analogy will remain a barrier to progress to the military for as long as it remains to be used to explain the unacceptable behaviour of its individuals. The preference to blame a few, rather than look at organisational failures, prevents the culture of the organisation being assessed and, if required, reformed. This paper has demonstrated that the military's assumption that in such cases 'all that needs to happen to stop the abuse is to prosecute and remove those few individuals who refused to play by the established rules'[149] is flawed. 'Organisations and leaders probably

cannot prevent every act of abuse or moral degradation… [but more] can be done to increase the odds in favour of workers doing the right thing'.[150]

These case studies remain a valuable tool in understanding basic human and social psychology and demonstrate how a range of factors can impact behaviour. By understanding the impact of cultural factors and appreciating that in times of danger or stress the professional and moral character of service personnel can be eroded, will better enable the military to put measures in place to prevent repeat incidents in the future. The provision of training on core values at all ranks and the reinforcement by leadership of the positive traits of discipline, ethos and cohesion to reinforce the military's core values and standards, will better equip personnel with the understanding and skills to combat against ethical drift. This will help prevent further occurrences of human rights violations by the UK Armed Forces.

Notes

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[3] Karen Davis, 'Culture' in *The Military Leadership Handbook*, Bernd Horn and Robert W Walker (Kingston, ON: Canadian Defence Academy Press, 2008), 200.
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[6] Christopher Graveline and Michael Clemens, *The Secrets of Abu Ghraib Revealed: American Soldiers on Trial*, (Washington, D.C: Potomac Books, 2010), 59-60.
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[9] Stanley Milgram, *Obedience to Authority* (Pinter & Martin, 2010), 3.
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[11] S. Alexander Haslam and Stephen Reicher, 'Beyond the Banality of Evil: Three dynamics of an Interactionist Social Psychology of Tyranny,' *Personality and Social Psychology Bulletin* 33, no. 5 (2007): 615, doi:10.1177/0146167206298570.
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[14] English, *Military Culture*, 15.

[15] https://en.oxforddictionaries.com/definition/culture accessed March 13, 2019.
[16] Geert H Hofstede, *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations across Nations* (California: Sage Publications, 2001), 9.
[17] Joseph Soeters, Donna Winslow and Alise Weibull, 'Military Culture,' in *Handbook of the Sociology of the Military* ed. by Giuseppe Caforio, (Boston: Springer Science+Business Media, LLC, 2006), 239.
[18] Joanne Martin, *Cultures in Organizations: Three Perspectives* (New York, NY: Oxford Univ. Press, 1992), 130.
[19] Kenneth Gold, 'Managing for Success: A Comparison of the Private and Public Sectors.' *Public Administration Review* 42, no. 6 (1982): 571, doi:10.2307/976127.
[20] Edgar Schein, *Organizational Culture and Leadership* (California: Jossey-Bass, 2010), 24.
[21] Schein, *Organizational Culture*, 28.
[22] Andrew Douglas Brown, *Organisational Culture* (Harlow: Prentice Hall, 2003), 89.
[23] For an in-depth review of social identity theory see Tajfel & Turner's 'Integrative Theory of Intergroup Conflict' in *The Social Psychology of Intergroup Relations* or Michael Hogg's 'Social Identity Theory of Leadership' in *Personality and Social Psychology Review*.
[24] Brown, *Organisational Culture*, 89.
[25] Carl von Clausewitz, Michael Howard, and Peter Paret, *On War* (Princeton, N.J: Princeton University Press, 1976), 187.
[26] Kurt Lang, 'Military Organizations,' in *Handbook of Organizations* ed. J G March, (Oxford: Routledge Library Editions, 2013), 855.
[27] Soeters, Winslow and Weibull, 'Military Culture,' 238.
[28] Hofstede, *Culture's Consequences*, 414.
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Speech

Battle of Britain Speech

A speech made in 2018 at the Royal Air Force Club, London, on the Royal Air Force's Hundredth Anniversary.

By Air Vice-Marshal (Retd) Marten van der Veen

Biography: Air Vice-Marshal (Retd) Marten van der Veen joined the Royal Air Force as an Engineer Officer after taking a degree at Oxford. He spent two years as an Exchange Officer with the French Air Force followed by the Advanced Staff Course. Later tours included Director of Defence Studies (RAF), Station Commander at RAF Cosford and subsequently at RAF St Athan. He was the last Commandant at the RAF Staff College at Bracknell, and in 1997 he retired following a tour as Director General of Support Management (RAF). Subsequently, he became Bursar and Fellow of Balliol College, Oxford.

Introduction

The Formation of the RAF

Now, to people of our age, I guess the first thing that comes to mind when thinking about the RAF is the Battle of Britain – undoubtedly the RAF's finest hour. Many even now would hold the somewhat rosy view expressed by one of the early post-war historians in 1945, namely that 'The Royal Air Force was certainly too small in 1939, but for all that it was the finest air force in the world'. Well, that was simply not true.

In 1939 Sir Edgar Ludlow-Hewitt, the CinC (Commander-in-Chief) of Bomber Command – one of the three operational commands, wrote: 'Today our bombing force is, judged from a war standard, practically useless and cannot take advantage of the excellent characteristics of its new and expensive aircraft.'

As for the second of the three operational commands, Coastal Command, this was the acknowledged Cinderella, weak in numbers and almost entirely equipped with obsolescent aircraft. It had virtually no anti-submarine capability, as the Royal Navy thought ASDIC[1] – their sonar system – would deal with any submarine menace. Coastal Command's main task was keeping an eye on surface ships. It did not quite turn out that way.

Of the three operational commands, only Fighter Command had anything like the right equipment and operational doctrine, but the numbers were small – so small that Sir Hugh Dowding, the CinC, when told in July 1939 to earmark ten squadrons for the British Expeditionary Force to go to France, wrote: ' If ten regular squadrons are withdrawn, the remaining resources would be altogether inadequate for the defence of this country.' So even Fighter Command was on a knife edge.

As for Army Cooperation Command – with battlefield fighter aircraft, with bomber aircraft designed to isolate the battlefield, and aircraft for reconnaissance, for artillery spotting, and for attacking tanks – well, it simply did not exist! All the lessons that the Royal Flying Corps had so painfully learnt in the First World War had largely been forgotten.

So in truth, in 1939 the RAF was largely in disarray. But let's not be too condemnatory. Little money had been available in the 1920's and 1930's, and the RAF could not do everything. But neither the public nor Parliament were really aware of this.

So how could this have happened in those twenty-one years since the RAF was formed in 1918? - at which time it had without doubt been the finest air force in the world.

This is the tale that I want to try to get over to you this evening, by attempting to answer five questions. Why was the RAF formed in the first place? How on earth did it manage to retain its independence? Why was it in disarray? How was it that Fighter Command managed to beat the German air force? And lastly, who were the brilliant people we should thank?

As I expect you all know, the Royal Flying Corps was formed in 1912 with two wings, one military and one naval – the latter separating from the Royal Flying Corps two years later. Even though the principal battles of the First World War took place on land in Belgium and France, there were some relatively ineffectual Zeppelin raids against London in 1915 and 1916. Later, in May and June 1917, the Germans sent waves of Gotha twin-engine bombers to bomb British cities. Hundreds were killed, of course, but it was nothing like the carnage in France. Nevertheless, the public were incensed. Britain had not been so humiliated since the Dutch fleet sailed up the Thames in 1667.

The government clearly had to do something, and so it set up a committee – of two: General Jan Smuts, a South African, and the Prime Minister himself, Lloyd George. Smuts wrote the reports; he worked fast and presented them within a month. The key report was the second one, which many historians regard as the first of three events vital to the RAF's victory in the Battle of Britain. It recommended the establishment of an independent Armed Service – the Royal Air Force. It is true there was some degree of consensus at that time that the two air arms had to be amalgamated – essentially because, and I quote: 'The Army were always trying to grab from the Navy materiel which the latter had been able to acquire. The Army, on the other hand, complained that the Navy purchased everything in sight, whether they required it or not'. So, the formation of the Royal Air Force in April 1918 stemmed in part from this procurement inefficiency, in part from the dismay that we appeared to have no proper defence against the Gothas, and in part from Smuts' understanding that aircraft opened up a new way to wage war – by bombing. We were lucky that the PM chose Smuts, and Smuts was fortunate to have as his closest adviser Lieutenant General Sir David Henderson, who had been the first commander of the Royal Flying Corps in France. It was these two men – Smuts and Henderson – who shaped the course of aviation history.

Major General Hugh Trenchard, the commander of the Royal Flying Corps in France in 1917 was recalled to be the first Chief of the Air Staff (CAS), but we were lucky in many ways that he did not get along with the Air Minister at the time. Extraordinarily, he resigned as Chief of the Air Staff of the fledgling Service just two weeks after the RAF was formed. He was then put in charge of the RAF's Independent Bombing Force – an organisation that was essentially given free rein to bomb the industries of Germany in those last six months of the War. And it was this experience, as much as anything, that persuaded Trenchard that Air Forces could be used independently of the other two Services to wage war. It was this theory of waging war that allowed him to argue for the continuing independence of the RAF during the 1920's. Indeed, the Trenchard Doctrine of offensive action largely drove the way the RAF was structured and equipped between the wars – and, as we shall see in due course, it led to the theory of the 'knockout blow' which did so much to frighten people in the 1930's.

But I am getting ahead of myself. Trenchard had been put in charge of the Independent Force; Major General Frederick Sykes, who had been heavily involved in the formation of the Royal Flying Corps, had become CAS after Trenchard's resignation; and in 1919 Churchill became

Secretary of State for War and Air, combining two posts - possibly because Lloyd George had concluded that the RAF should be disbanded after all. Churchill was not so sure. But he was clear that the Sykes plan for the peacetime air force was far too grandiose for the money available. He sacked Sykes and reappointed Trenchard, liking his alternative plan for a small, part-professional peacetime RAF. And Trenchard stayed as CAS for more than ten years! It is not surprising, then, that every RAF establishment has a portrait of him on their walls – including the RAF Club! If anyone man could be said to personify the RAF, that man would surely be Lord Trenchard. He presided over the Service for its first decade, fighting as maybe nobody else could have done to preserve its independence, and laying the foundations on which his successors could build. He is known by many, with considerable justice, as the 'Father of the Royal Air Force', although he himself disliked the term. In his view, Sir David Henderson deserved the epithet more than he, and that perhaps reflects the enormous influence Henderson had had with Smuts in the writing of report that founded the RAF.

Trenchard combined his plans for the structure of the Service with a radical proposal to use airpower to police the difficult corners of the Empire, initially Somaliland. There had been unrest in Somaliland for many years, and the Army had failed to quell the problem. The RAF proposed to send a force of twelve aircraft. And in the course of 1920 such a small, economical force, in conjunction with soldiers of the Camel Corps, did indeed quell the rebellion.
It conjures up a rather wonderful picture, doesn't it? Trenchard was now in a position to suggest similar policing operations in other troublesome parts of the Empire. No one was prepared to give up the colonies and protectorates, but on the other hand the resources available were few. And so, a system of reprisals by bombing, and so of deterrence, was established in Iraq, Aden and later in the north-west Frontier of India. In this way we managed to pacify large tracts of difficult countries, and to do so essentially independently of the other two Services. It was one of Trenchard's master strokes, but it required someone of Churchill's stature - with the imagination and the willingness to take risks - to accept that it could be done.

I mentioned three key events: the first being the establishment of an independent Air Force. The second of these key events was Trenchard's blueprint for the new Service. Let's examine this blueprint a bit. He knew that the RAF would be a technical Service, and that a large proportion of the personnel would have to be skilled tradesmen to maintain the aircraft. This needed a different calibre of people from those entering the Army and the Navy; indeed, it required an apprentice training college to develop their skills: RAF Halton, near Aylesbury.

Trenchard also knew that he needed to produce a stream of competent pilots, and instil an esprit de corps in an officer corps separate from the other two Services. Consequently, the RAF College Cranwell was established in 1920. Operational flying is and was for the most part a young man's occupation, and for this Trenchard introduced a short service commissioning scheme – a scheme unlike that of the other two Services. And in 1925 the first Auxiliary Squadrons were formed – the RAF's TA (Territorial Army) of the day.

Furthermore, Trenchard realised that the RAF would need a small cadre of well-educated senior officers – and to ensure that he established a Staff College at Andover. Some of the place names may have changed a bit, but in essence, Trenchard's structure for the RAF survives to this day – so durable was it.

His structure was one of the key elements in the preservation of the Service's independence in those interwar years, and crucial also to the way in which the Service worked during the war: the need for quality, both in technical training and in flying training - with which the RAF had been imbued during those pre-war years – was only very rarely put aside, and then only in the direst circumstances.

So, in view of the solid basis that Trenchard established, what went wrong in those pre-war years? Well, much of it stemmed from a lack of money. Where have we heard that before! Britain was no longer the richest country in the world, and we were still trying to preserve an Empire. The other thread was the understandable horror of what had happened in the First World War. 'Never again' were the watchwords. And remember that for Britain the whole exercise had been most unusual. The continental countries were quite used to raising conscript armies from time to time. Britain had never had to do that before. We did not want to do it again. The continental commitment had become an anathema, and so, after the great demobilisation at the end of the First World War, the British Army was run down to very small numbers again, and structured for Empire rather than for another continental war. The strategy of having an Air Force capable of delivering a knockout blow by bombing, and – by having such a capability, deterring potential enemies – came to be regarded as a very neat economical alternative. That and the Royal Navy to protect the seas around our islands.

It was very much the fear of a repetition of World War I and of aerial bombardment in particular that led to the Geneva Disarmament Conferences of the early 1930's, under the aegis of the League of Nations. In fact, the British Government made a number of apparently serious proposals to the Disarmament Conferences suggesting that bomber aircraft should be banned internationally. You can imagine the distraught rear-guard action from the Air Staff at the time. The conferences, which lasted from 1931 to 1934 – just as Hitler was coming to power, had the very unfortunate effect of putting any serious re-equipping of the Services on hold for a number of years, so concerned was the government to avoid compromising progress at these conferences. But in the end, Germany walked out, as Hitler had rather different ideas. Nevertheless, the bomber concept was still stuck in the public's imagination. One of the much-quoted speeches of Prime Minister Stanley Baldwin in 1936 has it that the 'Bomber will always get through.' And let us face it, at that stage they probably would have done – as proper fighter defence was not really possible then. It was this consensus that allowed the RAF to submit requisitions for new bombers. Much of the rearmament programme in the pre-war years included considerable expenditure on such famous aircraft as Wellingtons, Hampdens, and the design of other aircraft like the Manchester – which led to the Lancaster. The catch was, as

Sir Edgar Ludlow Hewitt articulated so tersely three years later, that even these fine new aircraft had neither the range, nor the bomb load, nor the navigation systems, nor the bombing systems actually to put into effect the strategy that the RAF propounded. The bomber doctrine had been accepted for so long because many believed any civilian populace would succumb to bombing very quickly and demand an end to the war. We should not mock these beliefs; there was without doubt an element of truth in them. The Dutch, after all, surrendered after Rotterdam was bombed and Utrecht was threatened.

But fortunately, Chamberlain became Prime Minister in 1937, and his Minister for Coordination of Defence, Sir Thomas Inskip, argued that 'the RAF's role is not an early knockout blow, but to prevent the Germans from knocking us out'. In this way, Inskip upended years of RAF doctrine which held that the best means of defence was attack. Even if the Air Ministry had not quite come to this conclusion, Dowding – who had been appointed CinC of Fighter Command in 1936, had certainly got there, propounding the so-called 'Dowding Doctrine': 'The best defence of the country is the Fear of the Fighter. If we are strong in fighters we should probably never be attacked in force.'

This was the very opposite of the 'the Trenchard Doctrine' of the knockout blow, which had hitherto been regarded as RAF's principal task and raison d'être. Fortunately, fighters had not been completely neglected – of course not!

But it was certainly the bomber doctrine that allowed the Service to preserve its independence – and just as well that it did – for that very independence permitted Fighter Command to emerge and perfect the system that beat the Germans. It was only under the pressure of war and with the mobilisation of all the best scientific and technical brains in the country that the bomber deficiencies were eventually resolved. By 1945, Bomber Command was indeed a mighty weapon of war. But not in 1939.

However, fighters alone cannot make a defence system. Let's therefore look briefly at one or two other technological developments. And I wonder if you can sense where I am going with this? Well, we really need to go back to 1934 to trace the succession of lucky breaks. The first of these was the formation of a scientific committee to survey air defence. It was actually a very high-powered committee, chaired by Henry Tizard, chairman of the Aeronautical Research Committee (and once an RFC pilot), and it included two Nobel laureates as well as senior Ministry men – both Service and civilian. It was in fact the first time that scientifically trained researchers were seen as having a vital part to play, not simply in the weapons of war, but also in the study of operations. One option they looked at was a 'death ray'. Not surprisingly, that was rejected, but the Superintendent of the Radio Department at the National Physical Laboratory (NPL) – a certain Mr Watson-Watt - added that, even if it could be devised, it would be useless unless you could locate the target accurately. But here he thought he might be able to help. He knew of a Post-Office report which mentioned that aircraft interfered with radio signals and re-radiated them. And so, the crucial concept of radar was born. The establishment

of this scientific committee was, I think, the third significant event that permitted Fighter Command to win the Battle of Britain.

That was one key technological development. The other was the development of the eight-gun monoplane fighters – the Spitfire and the Hurricane. It's an interesting story, and it starts with the Schneider Trophy competitions – which had been set up by a Frenchman in 1912, believe it or not! – to encourage aircraft development. And it was in part thanks to a private donation of £100,000 from a Lady Houston that the Supermarine team were able to compete once again in 1931, and win for the third time. This allowed them to keep the trophy, which, incidentally, you can see today in the Science Museum. It was the Supermarine design team, led by Reginald Mitchell, that came up with the design for the legendary Spitfire, which first flew in 1936 - based on the Schneider trophy developments.

But it must be said that the RAF's stroke of genius in all this was tying all the elements together into an air defence system, with a proper command and control system. Interestingly, a unified command structure of fighters and anti-aircraft guns had been established around London in July 1917 following on from General Jan Smuts' first report.

The unified system had never been dismantled, and in the late 1930's it was further developed by Sir Hugh Dowding and Air Vice-Marshal Keith Park into an extraordinarily smooth-running mechanism, centred on Headquarters Fighter Command at Bentley Priory. Some of you may have been there and seen the control room where Dowding could survey the unfolding battle. Information came in from the radars, from the Royal Observer Corps, from the airfields, from the ships – and everything was displayed on a huge horizontal map of Britain, with a dozen or two WAAFs (Women's Auxiliary Air Force) pushing markers across the board with something akin to billiard cues. The appropriate portion of the Fighter Command map was displayed at the next level down at Group Headquarters – 10 Group, 11 Group, 12 Group, and 13 Group. It was there that the squadrons were allocated to the incoming raids.

But control of the aircraft was exercised from the Sector Control Rooms at the level below that of the Groups. Originally the Sector Control Rooms were on some of the airfields, but fortunately alternatives were provided some miles off base. And here we see another stroke of genius that could only have occurred in the RAF. The people who actually controlled the aircraft in the air, directing them hither and thither to the right height and position to engage the enemy, were mostly mere squadron leaders. You could not possibly imagine that sort of tactical control of a major weapon of war being implemented by such relatively junior officers in the Navy or the Army – even nowadays!

The plotting system in Dowding's system was a masterpiece of graphic design, and the whole was an elaborate information network, a sort of analogue intranet – as we might put it today. It was a brilliant innovation: robust, flexible, effective, and the Germans really never understood how it was that the RAF was always at the right place at the right time to take them on.

But during the Battle of Britain – which raged officially between 10th July and the end of October 1940, we had another stroke of luck. In the first few weeks after Dunkirk, the Luftwaffe concentrated their attacks on coastal targets and ships in the Channel. Then they turned their attention to Fighter Command. Only if the Germans had command of the air could they keep the Royal Navy at bay while the invasion fleet went across. Although the British inflicted heavy losses on the German bomber fleets, and fighter force too, the Germans in their turn inflicted heavy damage on Fighter Command aircraft, airfields and some of the radar sites – but none of it enough to incapacitate Fighter Command. However, some stray bombs fell on London on the night of 24th August 1940, and Churchill immediately demanded retaliatory raids against Berlin. Some days later Wellingtons and Hampdens did a small amount of damage to Berlin, and Hitler was incensed.

On 30th August Hitler rescinded his ban on bombing London, and the Luftwaffe switched its main effort against London. The Germans may well have hoped that attacking London would bring the British government to heel. Even at that time Hitler was still – almost certainly – hoping that Britain would come to terms, and that no invasion would be needed. In the event, the change in targeting gave some very welcome respite to Fighter Command. Aircraft, airfields and radar sites were repaired, and on 15th September (nowadays regarded as Battle of Britain Day) the RAF once again inflicted very heavy damage on the Luftwaffe, destroying many of the attacking aircraft. Two days later the German invasion plans were cancelled, and Britain was left to fight another day.

So, the very first significant air battle in history had been won by the RAF, and the Germans had suffered their first defeat of the war. I daresay that you would expect me to make the point, but it seems to me quite impossible to imagine that we in Britain could have put anything like this air defence system together, had the Royal Flying Corps and the Royal Naval Air Service been squabbling over resources, contracts, engines, and aircraft as they did in the First World War. It needed the independence of a separate Service to allow the development of Dowding's smooth running air defence system.

And so, the RAF had reached its majority – it was twenty-one years in those days – in triumph. Much of it, of course, was due to the courage and sacrifice of the fighter pilots in the Battle of Britain. But we had come through on the basis of a tremendous amount of luck, as I have tried to indicate, quite a lot of brilliant management, and some exceptional individuals. Indeed, it seems to me that without their insight and determination, and indeed a touch of genius on the part of Smuts, Churchill, Trenchard, Tizard, Park and Dowding, I would not be writing this, or else it would be in German.

I will leave it to others to tell the RAF's story concerning the rest of the war – the bomber offensive, the Battle of the Atlantic, the land/air battles in the desert, Italy and in Normandy. The combination of excellent generalship, an economy geared for war, the brilliant use of science, technology and operational research, and of course extraordinary effort and sacrifice

on the part of those on the frontline brought success in every area. But sadly, in victory in 1945, Britain was financially broke, just as it had been in 1918.

One might therefore have expected a rapid demobilisation and enormous loss of military skill and expertise – just as there had been after the First World War. But this time – as we all know – another enemy appeared, namely the Soviet Union. Of course, military numbers went down, but we did not drop our guard. Indeed, since the war the RAF has been constantly busy. First, we had the Berlin Air Lift, and Confrontation with Indonesia. We were then involved with British nuclear weapons, the Cold War, and then – out of the blue – the Falklands. And that particular war was a watershed for the RAF, as we used precision guided bombs for the very first time. Only now can air power win wars on its own, as so many of the pre-war advocates had forecast. Our efforts in the first Gulf War, for example, led General Sir Peter de la Billiere, Commander of the British Forces, to write: 'I have no hesitation in saying that this war was won primarily through the effective use of air power using high-technology, precision-delivered weapons systems.'

Later we saw the RAF in action in the Second Gulf War, and then in the war against Colonel Gadhafi – which was a war conducted solely by aircraft. And very recently we have seen it in the war against Isis; there have been very few British boots on the ground there; our contribution has been attack from the air – just as it used to be in Iraq in the 1920's! Scarcely believable!

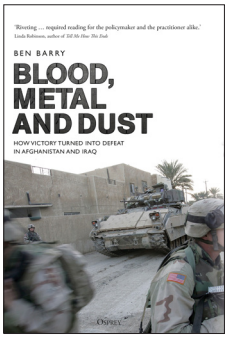
And to round off, let me come back to General Smuts' report of 1917 which sparked off the RAF's formation. In his report he predicted that 'the day may not be far off when aerial operations with the devastation of enemy lands and destruction of industrial and populous centres on a vast scale may become the principal operations of war, to which the older forms of military and naval operations may become secondary and subordinate.' Well, as we see, this has largely come true.

So, for the RAF it has been an extraordinary hundred years, and, I think, a pretty successful hundred years at that.

Notes

[1] Editor comment: The word used to describe the early work ('supersonics') was changed to 'ASD'ics: 'ASD' standing for: Anti-Submarine Division, hence the derived British acronym ASDIC.

Book Review



Blood, Metal and Dust – How Victory Turned into Defeat in Afghanistan and Iraq

Author: Ben Barry OBE

Publisher: Osprey Publishing (Updated 2022) (**ISBN:** 978-1472831040), 560 pages

Reviewed by Squadron Leader Chloe Bridge

Introduction

The tragic events of 9/11 created a paradigm shift in the international system resulting in two significant conflicts in Afghanistan and Iraq. Capturing both conflicts in a succinct manner whilst analysing what went wrong is the premise of Ben Barry's book, *Blood, Metal and Dust – How Victory Turned into Defeat in Afghanistan and Iraq*. An extensive narrative over 500 pages, Barry, with prior British Army experience and excellent academic credentials, presents the military dimension of both conflicts. Exploring mostly the American and British perspective, Barry scrutinises how the character of conflict impacted the dimensions of both wars which at first succeeded in the swift removal of Al Qaida/Taliban in Afghanistan and Saddam Hussein in Iraq but ended in strategic defeat. This is a fascinating and comprehensive, albeit bleak, read for all those interested in what went wrong during the so-called War on Terror post 9/11.

First published in 2020, the book presents readers with 14 chronological chapters intertwined with American and British operations and events that shaped both conflicts. The first chapter sets the scene and context from a historical perspective using the conflicts of the 1990s to illustrate how the Americans and British were set to fight in the 21st century in terms of mindsets, tactics, and equipment. This foreshadowing is followed by the events of 9/11 where

readers seamlessly transition between Afghanistan and Iraq through different incidents and key operations/battles. Although chapters are long, they are broken into concise more easily digestible segments to keep readers engaged. Complimenting key junctions of both conflicts are accounts from senior military leaders, such as General McChrystal on US Special Operations in Iraq, and General Richards on Counter-Insurgency in Afghanistan. These provide readers with strategic level thinking, whilst, in some segments, personal stories of military members on the ground are portrayed giving readers a sense of the human contribution and ultimate sacrifice. Examples include three US military officers and their work during the Anbar Awakening in Iraq 2006, the Camp Bastion attack by insurgents in 2012, which killed two and wounded 16, and the totality of civilian causalities.

Coupled with in-depth analysis, Barry also includes several pages of photos from both conflicts including the UK's Mastiff vehicle, Reaper Uncrewed Aerial Vehicle, and highly regarded political and military leaders. Most readers will be familiar with some of the photos and, whilst not unusual to see in a book like *Blood, Metal and Dust*, they illustrate the sheer amount of resource, advanced technology, and leadership adopted by the Americans and British during both conflicts. Just like one of the book's core themes, despite overwhelming resources and tactical advantages, these were not enough to prevent overall defeat.

Throughout the course of the book, Barry presents reasons for why both conflicts went from initial success to failure. These include the lack of clear strategy, limited understanding of culture, changing priorities from counter-terrorism to nation building, and a failure to adapt quickly to evolving dynamics. Furthermore, Barry details the impact of domestic support, citing incidents that damaged public opinion. These include the Abu Ghraib prison abuse scandal in 2004, the Al-Jameat incident with the infamous British soldier escaping from a burning Warrior in 2005, and the exponential use of Improvised Explosive Devices and the associated casualties. The last chapter focuses on the consequences, outcomes, and lessons from both conflicts where Barry states that ends, ways, and means must always compliment strategy across all domains not just militarily.

Barry has considerable experience and credibility to deliver an in-depth assessment of both conflicts. He served in the British Army where the foundations for *Blood, Metal and Dust* were created in 2009 when he was asked to analyse land operations in Iraq. Barry currently works for the International Institute for Strategic Studies as a Senior Fellow for Land Warfare and has authored several books so is a highly experienced writer. A significant number of sources, accompanied by extensive endnotes, reassures the reader that the book is well researched. With the first edition released prior to the chaotic evacuation of Kabul in the summer of 2021, Barry released an updated version of his book in 2022. A preface reminds readers of the predication that Barry made which was that the 2001 swift victory in Afghanistan would likely to be overturned with the Taliban returning to power within the country soon after.

Blood, Metal and Dust makes an excellent contribution to the understanding on the War on Terror and whilst both Afghanistan and Iraq were distinct conflicts, they share commonalities in terms of how they were fought and lost. Although the conflicts are complex with multiple dynamics, Barry keeps the reader engaged throughout making this book highly recommended.

Book Review

The Russo-Ukrainian War, The Return of History

Author: Serhii Plokhy

Publisher: Penguin (2023) (**ISBN:** 978-1802061789), 280 pages

Reviewed by Wing Commander Nigel Jones

Introduction

Serhii Plokhy is a noted historian and award-winning author who specialises in the history of Ukraine, Eastern Europe and Cold War studies. He was born in Russia and spent his childhood in the Ukraine, both then being part of the former Soviet Union. He studied in universities in Dnipropetrovsk, Moscow and Kyiv, going on to teach in and gain a professorship in the University of Dnipropetrovsk (now Dnipro which is very close to the frontline in south-eastern Ukraine). Following the fall of the Soviet Union Plokhy went on to take up posts in North America where he is currently professor of Ukrainian history at Harvard University and is also the director of the Harvard Ukrainian Research Institute.

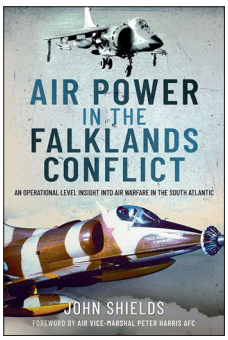
It might appear premature to be reading a history of a conflict before its resolution is known, indeed as I am writing these words the Wagner Group is marching on Moscow (23-24 June – spoiler alert came to naught!), but Plokhy has written a highly readable book which provides an historic and strategic examination of the tensions between Ukraine and Russia. His account of the conflict thus far provides a compelling analysis of the successes, setbacks and failures of the combatants and the influence of, and effect on, their respective allies and the wider world.

Through the first half of the book, Plokhy takes us through the origins of the current conflict. Not just the immediate and obvious frictions between a democratic and western looking Ukraine versus an insular and kleptocratic Russia, but also examines the roots of this enmity by looking at how the relationships between the two regions (now nations) have developed historically. This section draws in a vast sweep of history focussing on key developments and showing how they have led to tensions today. This focus gets sharper as we get to the present and he identifies key events from the past three decades which resulted in steadily increasing tension between Russia on one side and Ukraine and its developing alliance with the West on the other, indicating how the brief reproachment following the end of the Cold War might have been a missed opportunity. This section also demonstrates why the 'end of history' thesis, following the collapse of Soviet communism, was an overoptimistic assessment of those events and should remind us that similar tensions can be found elsewhere around the world, waiting for the right (wrong) circumstances to reignite conflict.

The second half of the book takes in the events since 24 February 2022. Plokhy reminds us of the sense of shock and surprise there was at the Russian invasion, both in Ukraine itself and worldwide. His description of how Ukraine rapidly responded both politically and militarily across the strategic, operational, and tactical levels of war provides a case history of why unity of purpose is so important. This coupled with the support of the international community toward Ukraine and their moves to economically isolate Russia. This combined resolve served to hinder Russian war aims, characterised by Plokhy as a bid by Putin to return an imperial Russia to the world stage. However, whereas the Ukrainian performance has been notable by its many successes, the opposite is true of Russia. The performance of Russian forces themselves has so far proved to be underwhelming, characterised by incompetent leadership, poor morale amongst the front-line troops, inadequate equipment and poor logistical support. All combining to undermine any reputation for military might that Russian conventional forces had. In addition, Putin's aim to limit NATO expansion backfired spectacularly as the invasion accelerated moves by both Finland and Sweden to accede to the alliance and neighbours on its Western border have strengthened their own forces through extensive rearmament.

The book itself is well laid out. It begins with a series of clear maps detailing: the growth of the Russian Empire since 1500; the security alignment of countries in Europe in 2022; the conflict in Ukraine itself; and a World map detailing levels of support to the respective belligerents. This is a useful device as it helps to put the conflict in its strategic context. It concludes with a comprehensive notes and bibliography section and an extensive index which will prove useful for students and researchers who will undoubtedly refer to this book which is likely to become a seminal text about the origins and early stages of this campaign.

Book Review



Air Power in the Falklands Conflict: An Operational Level Insight into Air Warfare in the South Atlantic

Author: John Shields

Publisher: Air World, 2022 (**ISBN:** 978-1399007528), 376 pages

Reviewed by Flight Lieutenant Chris Whelan

Introduction

In the years since the 1982 conflict ended, participants, historians and analysts of the Falklands War, have attempted to make sense of the multiple, complex factors which interacted with each other during the fighting. What has emerged from this are enduring simple narratives. The bravery of Argentine pilots flying low-level attacks against British shipping (so vividly captured on British news cameras) has become a fixture of narratives of the war. The Sea Harrier too, about which many doubts were held before the conflict but soon proved itself to be lethal to the point where it dominated the skies and deterred greater air attacks by Argentina, is another.

John Shields sets out to test these and other narratives with an operational-level analysis of air power during the conflict. In terms which are set out clearly at the beginning, he does not focus on the higher strategic aims or the details of individual tactical actions but on the broader operational objectives set in between. He further supports his argument by identifying both the British and Argentine Centres of Gravity (CofG), where they rested and how they changed as the conflict progressed. He makes a sound case for three British CofGs, which shifted as the campaign progressed – the aircraft carriers prior to the landing, the

landing craft and supporting vessels during the amphibious landing operations and the land forces during the final stages of the war.

Within this clear and well-defined framework, Shields uses a wealth of archival and anecdotal evidence to support his case. He begins with chapters focussing on air operations before, during, and after the British amphibious landings. He continues with separate chapters on prosecuting the Argentine CofG (focussing on air attacks on Stanley airfield) and defending the British CofG (concentrating on the effectiveness of the Sea Harrier), before drawing conclusions. Shields highlights the importance of unified command, focussing on outcomes rather than outputs when it comes to operational effectiveness and understanding fully the capabilities available to both forces and the theatre of operation.

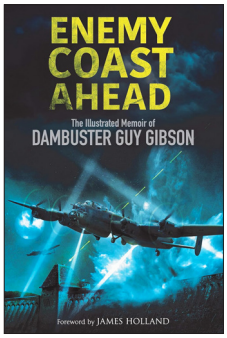
This is an extremely well-researched book and thoroughly supported argument from a noted author in this field. Shields includes extensive diagrams, annexes and lists providing a wealth of information, often on a day-by-day basis, which tracks the progress of the campaign, sourced from archival documents and previous books from both sides of the war. Highly illuminating and simple-to-understand diagrams, such as a schematic tracking numbers of Argentinian air weapons deployed compared to how many successfully reached their intended targets (p. 68 onwards) and another tracking employment of British AIM-9L Sidewinder missiles in combat (p. 130), add real weight to well-worded arguments. With this wealth of data, Shields is able to examine, in detail, previous assertions from authors such as Nigel 'Sharkey' Ward (*Sea Harrier over the Falklands*, Leo Cooper:1992), whose claim that the Sea Harrier so dominated the skies over the islands that the Argentinian air force was rendered ineffective and demonstrates effectively that this claim does not stand up to current scrutiny. He makes a reasoned case that the Argentinian attack aircraft, while flown bravely, did not pose as great a threat to the British, simply because they focussed their attacks on the wrong targets, especially during and after the British amphibious landings. Shields is also able to argue convincingly that British focus on attacking the airport at Stanley did not support the campaign at the operational level, and that British resources would have been better spent elsewhere, especially using valuable Harrier GR3 sorties for battlefield reconnaissance in the final stages of the campaign. Shields' air defence experience also shines through in parts, especially in discussions of air-to-air engagements, which adds real colour to the statistics supporting his assertions.

This book reads better as an academic discussion than a flowing historical narrative. The impressive wealth of data included with the arguments, especially in extensive annexes at the end of the text, leads to the reader frequently turning back and forth between chapters which distracts from the flow of the text, or simply overwhelms. Whilst it is undoubtedly detailed in its focus, this book also cannot be said to be a truly comprehensive examination of the air campaign. Any reader looking for information about the use of Intelligence, Surveillance and Reconnaissance or Air Mobility will not find it in anything like the detail the Attack and Control of the Air roles are examined in this book. Shields is at pains to highlight

what he is not including in his discussion, but this is much more aimed at exploring the kinetic effects produced by the British and Argentinian Air forces during the war.

That being said, this book makes a fine addition to the collection of any reader with an interest in the Falklands Conflict, operational level military analysis and planning, or both. The explanation of the often-misunderstood Centre of Gravity and its application to this conflict recommend this title on its own. With the addition of the exhaustive detail on the prosecution of the air war, this work will likely act as the standard reference book for any researchers or general interest readers looking to go beyond the well-worn and established legends surrounding this brief and decisive conflict.

Book Review



Enemy Coast Ahead: The Illustrated Memoir of Dambuster Guy Gibson

Author: Guy Gibson

Publisher: Greenhill Books; (2019) (**ISBN-13:** 978-1-78438-490-6), 528 pages

Reviewed by Flight Sergeant Paul Marr

Introduction

On May 16th, 1943, 133 men climbed into 19 Lancaster bombers and flew into the night sky, and legend. This enduring image of the Dambusters Raid, lodged in the national imagination, is still celebrated as an incredible feat of arms. May 16th, 2023, marks the 80th Anniversary of the Dambusters Raid and provides a wonderful excuse to revisit this incredible venture.

Enemy Coast Ahead: The Illustrated Memoir of Dambuster Guy Gibson, chronicles Gibson's wartime experiences from the start of the war until Gibson's Lancaster crosses the Dutch coast on returning from the now legendary bombing mission. This edition, the uncensored draft, includes the original introduction by, Marshal of the Royal Air Force Sir Arthur Travers Harris, and a new foreword by James Holland. A respected Second World War historian in his own right, Holland has written on the Dambusters (*Dam Busters: The Race to Smash the Dams, 1943*), and his foreword provides context and nuance for the modern reader. This edition also has a marvellous album of photographs, in fact there are over a hundred images of Gibson's experiences. Additionally, Dr Robert Owen, the 617 Squadron Official Historian, adds notes to Gibson's narrative correcting many of the editorial and personal errors whilst also adding helpful detail to Gibson's, sometimes, offhand comments.

Wing Commander Guy Penrose Gibson, VC, DSO and Bar, DFC and Bar, joined the RAF in 1936 on a Short Service Commission with the ambition of one day becoming a civilian test pilot. There is nothing in his early life to indicate the hero he would become; indeed, he passed his initial flying training with only an average rating. He was sometimes rude and condescending towards junior ranks and ground crews. Nevertheless, despite his shortcomings, he was able to lead his men and squadron on an almost impossible mission in a display of courage and leadership that has seldom been matched and never surpassed. He was 24 years old. As Holland states in his foreword, Gibson was undoubtedly flawed 'but his flaws make his achievements all the more remarkable' (p. xv).

Written in 1944, the modern reader will find the language quaint, or even anachronistic. However, it adds a wonderful feeling of nostalgia, allowing the reader to situate the book in the context of the time it was written. *Enemy Coast Ahead*, as you would expect, comprehensively covers the formation of 617 Squadron as a special operations squadron and the Raid itself, a story that Gibson tells best. However, the book can also be viewed as a 'coming of age' saga; detailing as it does, Gibson's maturing from a 'green' naive pilot on 83 Squadron and his rise to becoming the warrior chosen to lead the Dambusters Raid. During two tours on Bombers, and one on night fighters he flew, Hampdens, Beaufighters, Manchester, and Lancaster bombers, and although never properly trained, the Mosquito. Gibson is estimated to have flown 74 Bomber missions and at least 79 as a night fighter pilot at the time of his death. A record that led Marshal of the Royal Air Force Sir Arthur Harris to comment, 'He lived to see the dawn of certain victory; and no one man did more to bring it about' (p. xvi). As Gibson tells his own story, the incredible evolution of how Bomber Command grew, in both size and effectiveness, to become the incredibly effective and ruthless weapon it was by 1944 is also revealed, almost exactly mirroring Gibson's meteoric rise.

Throughout there is a studied nonchalance about the narrative which comes to the fore in the recounting of illuminating, and often amusing, anecdotes. On a mission to Antwerp, flack hits Gibson's aircraft, and he realises, 'something is wrong'. We are left imagining the horror of the moment, Gibson is fighting to control his aircraft and to save the lives of his crew surrounded by enemy fire. Then Gibson laconically continues, 'A shell had entered by my feet, had got the toe strap on my rudder bar and then had hit its pivotal point and knocked it spinning forward on to Houghton's head, where it had laid him out. Quite an unlucky shot' (p. 126). There is also an amusing encounter between a labourer and a spitfire pilot at the height of the 'Battle of Britain' and a discussion on pay. It transpires that the labourer was paid two pounds more a week than the pilot, '" but, of course, I work through alerts"' (p. 166) explained the helpful worker.

The narrative includes numerous discussions on the inevitability of victory between Gibson and his comrades, written during wartime, and essentially commissioned as a public relations exercise, it is difficult to discern whether these discussions took place, or whether they were intended to boost the morale of the British public. In view of the publicity surrounding the

Raid at the time it is, perhaps, surprising that Gibson includes a note of remorse about the mission, and of the tragedy of war, 'No one likes mass slaughter and we did not like being the authors of it' (p. 352). A careful reading also reveals Gibson's preoccupation with death and dying, not surprising given how many of his colleagues, and friends, die throughout the war (here Dr Owen's notes are revealing and helpful). Whether these thoughts are an indication of Gibson's state of mind at the time of writing, or not, the undercurrent of fear pervading his experiences only accentuate his incredible courage and achievements.

Enemy Coast Ahead has something for everyone and therefore, comes highly recommended. For the avid historian there is a first-class memoir providing insights into how Bomber Command became a terrible weapon of war. Though the reader is warned, by Gibson himself, that he was working without access to notes and, indeed, there are numerous errors in names, places, and dates (mitigated in this case by Dr Owen's notes, but nevertheless demonstrate the pitfalls of relying on first-hand accounts for reliable 'history'). For the 'Dams', or air power, enthusiast there is an incredibly detailed first-hand account of the difficulties surrounding creating a bespoke squadron, with modified aircraft, fitted with an experimental weapon, for a dangerous mission in just ten weeks! And for the first-time reader there is a rattling-good adventure tale, the like of which is seldom told.

The Chief of the Air Staff's Fellowship Scheme provides a fantastic opportunity for RAF personnel of all ranks to undertake sponsored full and part-time postgraduate study at masters and doctoral level. There are a range of Fellowships available including an online part-time MA in Air, Space and Cyber Power, a full-time MA in Security and Strategy and an MPhil in International Relations at Cambridge. Further details, including eligibility criteria, are available in the DIN (2022DIN07-086) but if you or a member of your team are interested in applying then please contact the Directorate of Defence Studies team: CAS-ASDefenceStudies@mod.gov.uk

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