BACK to the

future ?

he case for Environmental Doctrine for Air Power

By Group Captain Stuart Peach, Director of Defence Studies RAF

What is doctrine ?

Doctrine is in fashion. Since the end of the Cold War, western air forces and air arms have poured considerable brainpower and staff activity into creating, building and extending air power doctrine. The aim appears to have been to explain what air power can do and how air forces and air arms intend to apply air power to the next generation of opponents. Western air forces and NATO have been busier than most in the quest for the doctrine holy grail to fit every contest and every scenario. It is likely to be a long quest. The problem is that doctrine can be invoked, mis-employed and, most often of all, misquoted because of course every conflict and scenario is different. This presents military planners with a dilemma because each crisis creates its own unique lessons for the future. As the spectrum of conflict becomes more complex and blurred, how do we ensure we have the right blend of air power doctrine to ensure the appropriate application of air power to exploit air power's growing utility around that spectrum of conflict? If we allow our doctrine to wither on the Cold War vine, we run the risk that joint doctrine will pour emphasis in areas that may not play to air power's greatest characteristic - flexibility. So how do we ensure our doctrine is relevant and dynamic enough to fit the next crisis?

Why bother?

This article will dwell on the historical legacy of air power doctrine. The reason is to attempt to move away from the 'classic' OED view of doctrine as: "that which is taught"[1] towards a more flexible and enduring definition. Any platform or weapon system in service is described as a legacy system; it should be the same for doctrine and concepts. Next, the article will briefly examine Cold War labels and descriptors for their enduring efficacy and relevance for the Millennium and beyond and offers a possible model for the spectrum of conflict. So does that mean air power doctrine will survive as a separate entity has a future? For now, in my view, definitely yes. Although great strides in 'jointery' have been taken in the past few years, the role of air power doctrine is to expand the knowledge base of what air power can bring to the joint and combined arena of war fighting around the spectrum of conflict. There remains space on the burgeoning doctrine bookshelf for air power doctrine. Last, therefore, the article will outline the likely contents of the Third Edition of AP 3000 to be published this autumn.

First of all, however, for the readership steeped in a brief and, possibly somewhat reluctant, introduction to doctrine through the auspices of the issue of AP 3000 at Cranwell, it is worth noting the changes which have taken place in the UK doctrine environment.

The UK doctrine environment

As British Defence Doctrine (BDD) published in 1996 reminds us: "Doctrine is fundamental principles by which military forces guide their actions in support of objectives. Doctrine is authoritative but requires judgement in application, it is dynamic and must be received for relevance."[2] BDD offers a strategic level view of the governmental process, which underpins the doctrine for the employment of military force by the UK. If doctrine is in fashion, joint doctrine is the fashion of the moment. Hard on the heels of British Defence Doctrine, 'Joint Operations Doctrine for the UK Armed Forces' should be published by the UK Permanent Joint Headquarters (PJHQ) later this year. Next, and logically, UK doctrine writers will turn to a cascade of joint doctrine to support operations: communications, logistics, Special Forces and so on. In this joint doctrine climate, it can appear to swim against the tide to argue for the retention of air power doctrine for the UK, led and prepared by the Royal Air Force. This article argues that this is not the case. The key to answering the question posed in the first paragraph is to ensure that fully thought-through 'joined up' doctrine for the air environment is available to inform and influence the joint doctrine process.

This view is not without its opponents. As new concepts for air power in the next century emerge and make their way across the Atlantic, it is tempting for military planners to encourage the writing of doctrine to justify the latest acquisition or solve the incessant procurement dilemma as resources are ever more constrained. The danger in this approach is that it leads to doctrine becoming skewed and written to justify a system which may not prove to have the utility which is claimed. Against this background, AP 3000 will be updated and issued as a 3rd Edition. The re-write will be more than cosmetic. The new manual will examine the considerations which apply to air power to suit the spectrum of conflict. The thematic approach built around sub-campaigns of the air

campaign will be amended to fit the post Cold War era of complex emergencies and interventions born out of an expeditionary era which will feature air operations around that spectrum of conflict. But, if we are to exploit the full potential of air power, our doctrine must be coherent with that of our friends and allies. So AP 3000 will attempt to offer, in a readable way, both a handbook for those who need a deeper understanding of what air power can and cannot do and a general introduction - not to mention a source of footnotes - for those who study, apply and exploit air power.

The lesson of history

As the Chief of Air Staff reminds us in his foreword to this inaugural journal, powered flight is still less than a century old. The Royal Air Force is eighty years old this year. Throughout its history, the RAF has been in the vanguard of the development of air power doctrine. The first doctrine manual published in 1928 'RAF Air Operations' remains an excellent read.[3] The lessons of the history of air power doctrine are instructive and warn us of the pitfalls that could lie ahead if we ignore them. I will cover each in turn.

The first World War - The beginning

The roles and missions that we fly today were born during the First World War. In the early fluid battles of 1914, the Royal Flying Corps flew reconnaissance missions to extend the 'eyes' of the artillery to enable the commander to see the other side of the hill. Armed reconnaissance, fighter sweep, escort, offensive counter air, defensive counter air, the suppression of enemy air defences followed suit. This litany is not drawn from the Gulf War, but the battles above the trenches of Flanders. As Peter Daybell makes clear in his outstanding article in this Journal on the offensives of 1918, the pioneering airmen understood how to apply air power to the principles of war and concentrated force to allow air power to shape the battle. Similarly, in a forthcoming article in this journal, Peter Dye will examine the depth and complexity of the logistic system which underpinned the success of the Royal Flying Corps. Lessons were learned, doctrine and tactics developed on all sides which were to have a profound impact on the development of air power. Strategic bombing began not in the 1930s, but in 1917. The shock of the action against London by the Germans in 1917 and the inadequate air defences of the Capital prompted the Smuts Report that laid the foundations for the formation of the RAF. But, as soon as the baby was born, the internecine sniping to throw out the baby with the post war 'bath water' began.[4]

Inter War years - The air control legacy

In the battles of the 1920s to justify the continued independence of the RAF as a separate service, claims were made of the war-winning qualities of war waged from the air, which led, ultimately, to the "bomber will always get through" mentality. The developments of fighters, fighter/bombers and their associated weapons systems almost stopped. But the claims for strategic bombing could not be fulfilled with existing air power technology. In the 1920s and 1930, aerial bombardment was inaccurate, long range navigation hit and miss and the weapons - even if they hit the target - were largely ineffective.[5]

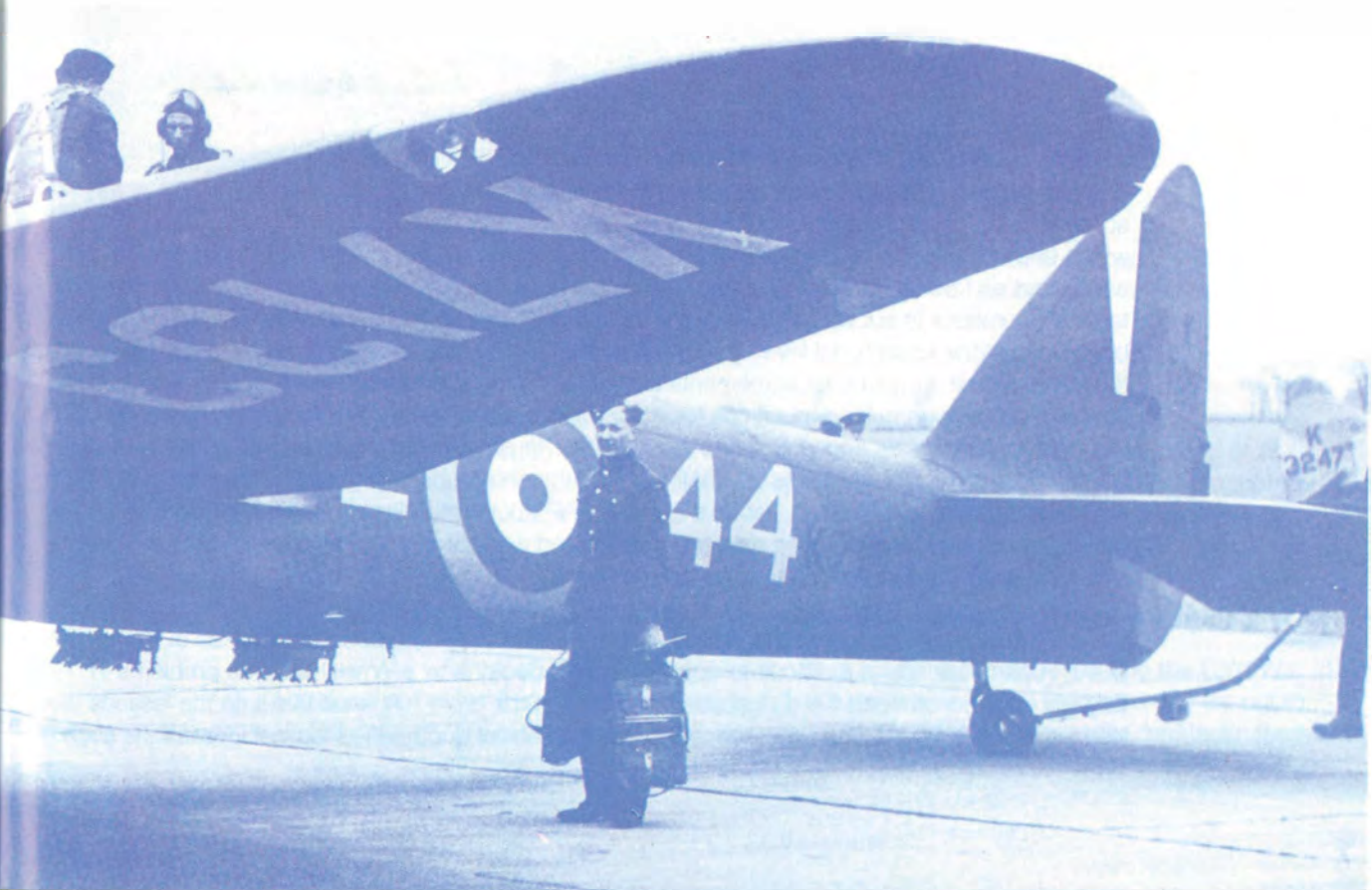
Similar claims and counter-claims bedeviled the thinking on the application and exploitation of air power in the US in the 1920s and 1930s. The battles between the prophets and the doubters of the potential of air power culminated in the frustration and acrimony surrounding B. Gen Billy Mitchell's Court Martial and dismissal from the US Army Air Corps in 1925.[6] The legacy of the debate was profound and was to lead to many of the doctrine failures of WWII.

Meanwhile real world operations for the RAF throughout the inter-war period focused on the 'doctrine' of air control to police the troublesome lands and mandates of the British Empire. This doctrine appeared to work in the 1920s when those it was directed against fled at the sight of an aeroplane. It failed when the opponents stood their ground or fought back.[7] And, most importantly of all, this `doctrine' allowed the RAF to neglect trends in design and technology and soldier on with WWI platforms and WWI derivatives until the late 1930s. Indeed, if it had not been for a determined band of air-minded entrepreneurs, engineers and pilots who developed what were to become war-winning designs independent from Air Ministry specifications or staff requirements, it could have ended in national disaster. As it was, it was a close run thing.

RAF day bomber tactics in 1939 proved disastrous with huge losses for little tangible gain - *Bristol Blenheim 1 of 114 squadron*

The World War Two legacy - Air Power comes of age

The aphorism for any realistic operational planner is 'no plan survives contact with the enemy'. In the Second World War, many cherished RAF tactical doctrines were rapidly abandoned. The RAF fighter doctrine, which had led to the 'tight' formation tactics of 1939, proved ineffective in the face of the Luftwaffe. Moreover, RAF day bomber tactics in 1939 proved disastrous, with huge losses for little tangible gain[8]. Of course, the great strength of the RAF was that it was able to adapt in the face of adversity and turn the tide of battle. Nevertheless, the lessons of the development of doctrine during WWII remain valuable for the future. Air power technology developed exponentially. A pioneering airman steeped in the early days of aerial warfare would have been entirely at home in the air forces of 1939. By 1945, he would not. The bombing packages of hundreds of aircraft, which bombed Berlin and Tokyo towards the end of the War, were highly choreographed and organised. With Pathfinders, jammers, escort fighters, deception elements, not to mention radar, electronic counter measures, 'window' and long range navigation aids such as Oboe, many of the seeds for post war aviation and doctrine were sown.



The Cold War nuclear legacy - Doctrine comes of age again?

As the Cold War became a reality, post WWII air forces were in rapid, almost precipitous, drawdown. The Korean War reversed the trend temporarily but many of the hard-won lessons of WWII were ignored. There were very few strategic targets available in North Korea, but a strategic bomber offensive was waged anyway. Similarly in the air-to-air war fighter pilots and commanders were shocked by their first encounters with the Mig 15. Again, as in 1939, the doctrine from which the tactics had been derived was found lacking. Another example is interdiction. Interdiction was attempted according to the 'doctrine' of WWII. But the lessons of WWII were ignored and when coalition aircraft flew low enough to identify their targets they would be engaged by anti-aircraft guns; if they flew high enough to avoid the defences, they would miss their targets.[9]

Another problem which came to the fore in Korea, and was to become a trend throughout the Cold War, was the lack of doctrinal coherence between the air forces participating in the coalition. Co-ordination and co-operation between US air arms was particularly poor with several avoidable fratricide incidents. Command and control arrangements were particularly complex and allowed different doctrines to be applied to the same target sets by the same aircraft, but from different elements of US air arms.[10]

Nor were the abundant lessons from Korea absorbed by 1950s air doctrine writers. They had other priorities. Political and social scientists developed the theories of existential nuclear deterrence, which underpinned the air doctrine for the Cold War. The 'nuclear' influence ran deep in both NATO and Soviet air forces. In the 1950s and 1960s, NATO air doctrine focused on the nuclear role and tactical operations in support of that role; a deep lacuna developed in planning for conventional air operations at the operational level. It was only in the 1970s and1980s 'flexible response' became the strategy and arms control agreements and other trends such as specialist weapons for airfield attack and precision guided munitions for interdiction became reality, that focus switched back to planning for large scale conventional air operations. Air power doctrine remained generally in what fighter pilots call 'lag', and it was the RAF who led the charge back towards some form of coherent air power doctrine. In 1990, D Def S(RAF) issued AP 3000 1st Edition - Air Power Doctrine.[11] This broke new ground by expanding existing doctrine and explaining the characteristics of air power and their application according to roles and missions.

The US experience dominated this period and in Vietnam they repeated the mistakes of Korea. The USAF in particular found it difficult to apply Cold War doctrine to a 'small' war with problems in targeting and co-ordination even between elements of the USAF. At least this time the lessons were learned with the 'single manager' concept and a number of doctrine-led tactical innovations such as

he USAF in particular found it difficult to pply Cold War doctrine to a `small' war - 4 Phantoms and F-104 Thunderchiefs Nang 1967

the Wild Weasel concept, which developed into the 'suppression of enemy air defences' now known as SEAD. In addition new technologies, such as PGMs were beginning to deliver the tools needed to make good the promises of air theorists. However, perhaps most importantly, the perceived failure of US doctrine in Vietnam led to a number of important studies and, at long last, a 'widening' of air doctrine to embrace not just the spectrum of air power roles and missions, but the spectrum of conflict. This development was not a moment too soon, as events in the Gulf were about to demonstrate.

The doctrine lessons of the Gulf War - Air Power comes of age for th third tim

The Gulf War was the apogee of the application of air doctrine developed during the Cold War. This article will not cover that campaign in any detail, but there is no doubt the US forces set out to exorcise the ghosts of Vietnam. They succeeded, but the debate between the 'strategic' targeting

The perception was created that air power could not be used for `complex peacekeeping', this perception was misleading - *RAF Jaguar in the Gulf*

exponents, who predicted disproportionate impact from attacks against strategic targets, and the remainder, who followed the logic train of NATO doctrine, was no less vigorous than the Air Corps Tactical School (ACTS)[12] debates of the 1930s.

Despite the best efforts of the air planners, it has become increasingly apparent that mistakes were made. In particular, the rigid distinction that was drawn between the 'strategic' and 'non-strategic' targets sets was perilously close to dogma. Moreover, the historiography of the Gulf War is emerging from the shadows of immediate post war memoirs to offer a more balanced view.[13] The lesson for future air power doctrine is not to take the Gulf War as a new paradigm for future air warfare, rather keep the lessons in context.

The legacy for Air Power doctrine: Historical baggage

The writing of the early air power theorists such as Trenchard, Douhet and Mitchell were doctrinaire. Indeed, since their thinking was taught to fledgling air arms across the western world, their views and their conviction that 'theirs was the only way' neatly encapsulate the classic OED definition of that which is taught. Moreover, we should not forget that their thinking fitted neatly into the political

context of the 1920s. After the slaughter of WWI, although air power and its potential had only entered the experience of a few, it had entered the imagination of many. Politicians were not slow in realising the mood had changed as the soldiers returned from the Western Front to become voters. They painted in the details of the horrors of total war waged by mass produced weapons.
As Churchill's biographer admits, it was no coincidence that Winston Churchill 'volunteered' to become the first 'Secretary of State for Air' in 1919.[14] He had grasped the potential.

Other early air power doctrine legacies, however, understandably, cause greater scepticism. Another commonly held misconception is that Trenchard advocated the doctrine of 'terror bombing'. Again, the perception is somewhat flawed. As Phil Mielinger makes clear in 'Paths to Heaven', what Trenchard advocated was attacks against industrial workers which were, in the case of heavily industrialised countries such as England and Germany, concentrated in densely populated pockets, as a means of attacking the 'means of production' of mass produced weaponry. His thesis was that such attacks would directly impact upon the ability of a nation to sustain a prolonged war effort. Again in the context of the 1920s, this was not as politically untenable as it may now appear, but as we saw earlier, was not deliverable.

It was, therefore, neither the vision nor doctrine itself that was discredited, but the means available for its implementation. As pointed out above, we need to take care in applying the lessons from a particular conflict too liberally and we need to give those trusty Cold War labels a good dusting down.

Re-examination of Cold War labels: The key to change - Bosnian case study - The lessons for doctrine

Even now, commentators and practitioners talk of 'high intensity conflict', `low intensity conflict' and, in many schools and military colleges, the air power 'campaign' with supporting and contributing sub-campaigns are religiously applied to the `wargame' scenario. And yet, the context in which air power is likely to be applied has changed. If the Gulf War was the high point of the application of air power doctrine borne during the Cold War, our experience in Bosnia was the opposite. In Bosnia, air power was applied around the spectrum of conflict. It was deployed to offer an air presence, employed in combat air patrol and maritime surveillance operations to enforce sanctions and, albeit sporadically, tasked in direct and indirect support of peacekeeping and peace enforcement actions to offer, via precision-guided munitions, the precise application of military force.

In 1992 and 1993 air power was given a bad press. The perception was created that air power could not be used for 'complex peacekeeping'. This perception was misleading. The fact that

force was applied nine times over two years and was largely ineffective, is neither the fault of doctrine nor those who flew the missions. The problem lay with the Byzantine complexity of the command and control arrangements, which prevented the rapid exploitation of the inherent characteristics of air power. By 1995, however, after the embarrassment of the hostage-taking following the Pale raids, the determination and resolve of the international community hardened and allowed the planning and execution of Operation Deliberate Force in August and September 1995. During that period NATO flew over 3,500 missions in three weeks. Air power increased the operational tempo and moved up a gear into peace enforcement. The results - as broadcast by the global media - were impressive. Air power through the precise and coercive application of military force applied pressure on the Serb leadership to bend to the will of the international community. Again the detailed lessons learned are not relevant, however, through a concentration of pressures, compliance was achieved and the Dayton agreement became a reality. Importantly, the High Intensity/Low Intensity Conflict (HIC/LIC) labels were not relevant since the missions flown were always intense for the crews involved. The fact that they were classified as 'peace enforcement' rather than 'warfighting' was irrelevant. Moreover, although NATO's air operations were mounted on the component commander model, many work around and 'unusual' C2 linkages had to be accommodated to cater for the context and scenario. Perhaps most significantly, political interest in the targeting process, for example, was intense. It is likely to be so in future.

As we attempt to draw lessons from Bosnia the problem may be that, thus far, the response from the air power doctrine community is to pour resources into the 'current' operational focus, disperse the team with their hard-won lessons learned and go back to what is comfortable. That is to prepare for warfighting based upon the JFACC model with the whole gamut of air operations.

Instead, why not accept that complex, messy, blurred edges will continue to dominate around the spectrum of conflict. Air power will continue to be tasked to respond to the unexpected. Rather than re-fight the Gulf War, as potential adversaries become even more likely to adopt an asymmetric strategy, the challenge for the wargames is to integrate the air power response to asymmetric challenges to the status quo. This is easier said than done. But again the UK is the vanguard of change. The Combat Studies Research Centre at Camberley has developed a generic enemy doctrine based on `GENFORCE' a theoretically based enemy capable of challenging Western Military Forces. The doctrine includes a comprehensive air element and can be adapted to embrace asymmetric strategies. As opportunities for large-scale exercises become fewer in number, we need to ensure that we are challenged at all levels. If that means challenging sacred air power 'cows', so be it.

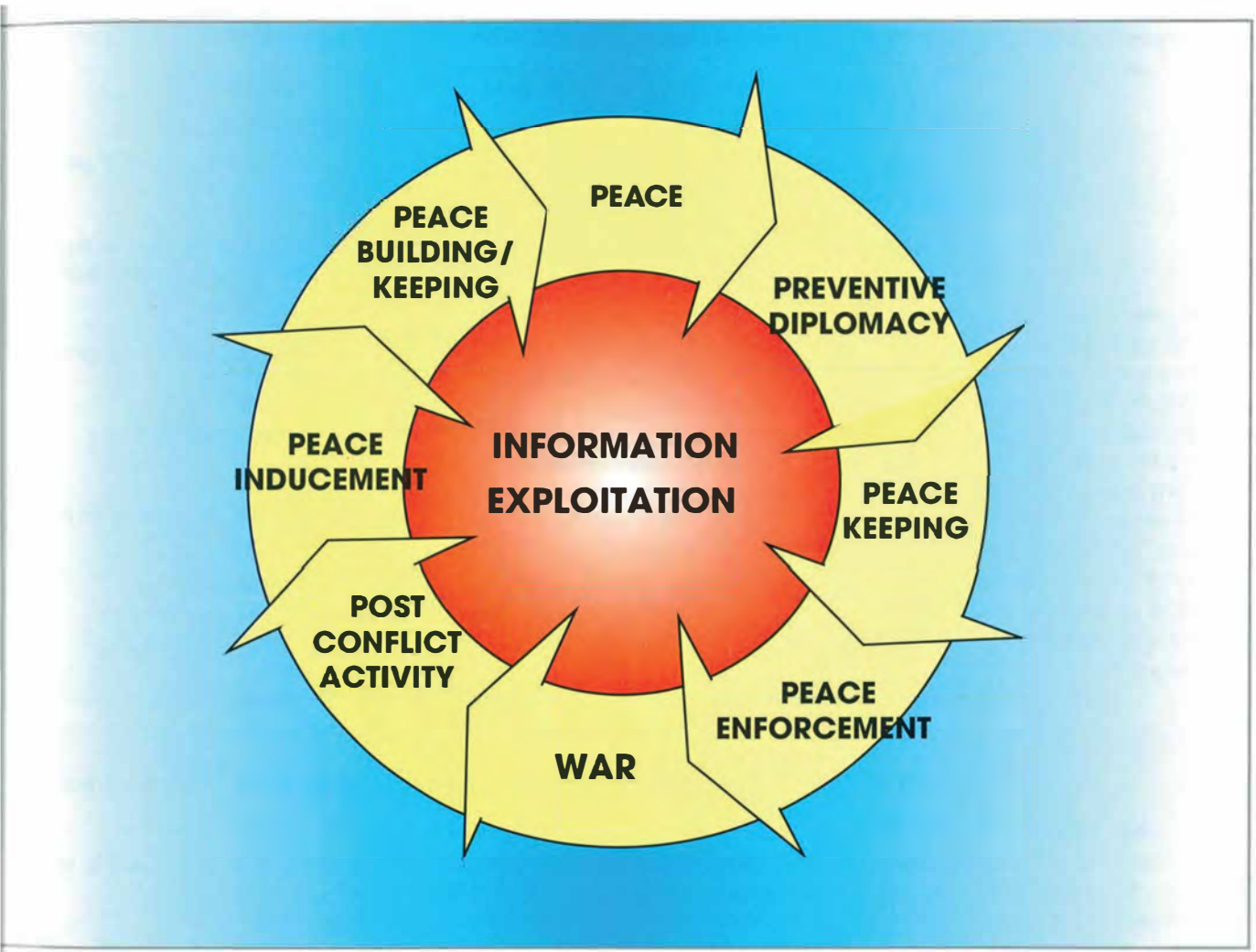
A possible conflict model

The model highlighted below is purely illustrative and attempts to offer an alternative to the 'linear' 'graduated' model. The linear model allows a 'halt' phase which would be air power heavy, a build-up phase which may be prolonged and a counter offensive phase to restore the status quo ante[15].

The illustrated, alternative, model builds from Boutros Boutros Ghali's 'Agenda for Peace' first published in 1992 and suggests that the modern world is much more complicated. The boundaries are blurred and the model can operate clockwise or anti-clockwise depending on the scenario. Nor should the steps be seen as sequential. As Bosnia has demonstrated we may switch from peace keeping through peace enforcement to peace inducement. Furthermore, the political and

diplomatic process will, rightly, attempt to steer the crisis away from the six o'clock position back to the twelve o'clock that we all seek.

As emphasised above, this model is intended to be purely illustrative but it does at least suggest that air power has great utility around the spectrum of conflict. But how do we incorporate such thinking into air power doctrine?



The Spectrum of Conflict

Back to the future - AP 3000 3rd edition

Air power - factors to consider

The third edition of AP 3000 will inform the joint doctrine process from an air power perspective. The factors or considerations which need to be taken into account if air power is to be properly exploited need to be described.

- Air power offers perspective - often from space - across the battlespace.
- Air power can increase and, importantly, reduce operational tempo to suit context and scenario.
- Air power can be deployed in order to poise near a potential crisis, either on land or afloat on an aircraft carrier.
- Modern aircraft are multirole - the flexibility that this brings can have a great force multiplier potential, but this needs to be matched against the complexities of logistic support and sustainability for deployed operations.
- Platforms and, increasingly, stand-off weapon systems, can take advantage of long global reach and respond swiftly to demonstrate commitment and resolve.
- As a crisis develops air and space-based surveillance systems will be ubiquitous in monitoring events and informing the crisis management process.
- Air power can integrate easily with land and maritime power and is the key enabler for joint and multinational operations.

Equally, however, other factors need to be taken into account.

- Air power can be fragile and may need to be protected to carry out its mission or to protect the air base or aircraft carrier.
- Equally air power normally needs air bases and may need host nation support.
- Although inherently impermanent, twenty-four hour air presence can be maintained, but at a price.
- Aircrews, spares and consumables such as fuel and weapons need to be available to allow sustained operations.
- Similarly although aircraft can respond quickly, response to a fleeting target may not be so swift.
- Last, the lead-time in regeneration or reconstitution of air power systems, means that a capability once lost cannot easily be regained.

Air power - command and control

As the previous section demonstrates, the traditional view of strengths and weaknesses can be replaced with a more measured view of the considerations that might apply, depending on the context and scenario. That is where the possible model of conflict helps to shape that degree of interaction with other means and other ways of waging warfare. But, if that model has a utility, it will be the fusion of data from all sources to allow for timely information exploitation. This fusion should take place to inform and assist the air C2 process. Although we recognise that the centralised command and decentralised execution model still holds good, we also need to be aware that centralising tendencies are at work in the development of even faster information systems. Nevertheless, within a multinational, combined or joint environment, the component commander of Joint Force Air Component Commander (JFACC) model remains the likely model of choice.[16]

COMBAT OPERATIONS

Control of the air

But what of the exploitation of air power itself? Despite the need to discard Cold War labels, the fundamental roles and missions have not changed. The need for a degree of control of the air remains the *sine qua non* for any military application of force. There are degrees of control from air presence and air freedom through to air superiority gained by achieving a favourable air situation. We must, however, accept that there are risks in the claims for air supremacy or air dominance, especially if an opponent possesses surface to air missiles or other air defence systems. This could be termed operating in air space that is inherently 'antagonistic'. Within this overall rubric, the offence and defence balance between defensive and offensive counter air operations comes into play and, again, will depend on the context and scenario prevailing. For example, 'border' crossing authority may not be granted, limiting options to a defensive counter air strategy. Equally, if the opponent is not operating from fixed bases or, in asymmetric cases, does not possess an air force, there is little point in pursuing traditional offensive counter air operations. What is likely, however, is that suppression of enemy air defences missions will continue to have an important role to play in limiting the ability of an opponent to challenge 'our' control of the air.

Strategic effect

Increasingly the distinctions between the levels of war as distinct spheres of operations are becoming blurred. Tactical aircraft fly missions which have strategic impact; whilst 'strategic' platforms such as B-52s fly tactical support missions in the battle area. The collapse of the levels of war into each other, is particularly prevalent in smaller scale operations. The key is not the platform or even the target but the impact or effect sought. Air power can be targeted to touch or disrupt an enemy's strategic centre of gravity. Such missions may be flown independently from a joint campaign or may be a vital part of such operations. Whatever the case, however, they will always be tasked in support of the strategic end-state. This is more than bombing, it could be SH/SF, MRA or FJ aircraft, it is the effect that counts.

Joint Force Employment - Direct and indirect support to the joint campaign

The utility of air power as an enabler in support of the joint/multinational campaign is not in doubt. After the required degree of control of the air has been achieved, air power can offer support for land and maritime operations around the spectrum of conflict. Air assets can find and fix enemy forces to facilitate ground manoeuvre, which can shape the battle space for the 'contact' battle at sea or on land. Equally, if required, air power can offer direct support to land and maritime operations, via close air support or tactical air support for maritime operations. Through the combination of concentration of force and tactical surprise, air power can help to achieve decisive breakthrough. Although collateral damage restrictions and the need for precision are paramount, modern air power, be it rotary or fixed wing can mass firepower where and when it is needed. Similarly fixed wing air platforms have a vital role to play in what the British Army now call air manoeuvre as well as in the more traditional role of air assault. Furthermore, if reconnaissance and surveillance missions are important as a crisis develops, they are equally important in warfighting itself. The quest for information, both for battle damage assessment and to allow the commander to see the other side of the hill will not go away. Of course, the technology with which such missions are carried out may migrate to space or to uninhabited aerial vehicles, but air reconnaissance remains vital.

Combat support operations

Similar considerations apply to combat support operations. If control of the air is the *sine qua non* for all military operations, air-to-air refuelling is becoming the parallel for air operations by day and by night to increase reach and decrease response times. Similarly airlift platforms will be in great demand in crisis and conflict both for deployment and recovery and for intra-theatre mobility. Other support functions such as electronic support or offensive fighter sweep or escort missions do not complete the roles and missions 'list' but help to make the point that combat support missions are pervasive for the world of complex emergencies.

Although collateral damage restrictions and the need for precision are paramount, modern air power, be it rotary or fixed wing can mass firepower where and when it is needed.

Force protection

The final element of change we need to embrace in air power doctrine in an expeditionary era, is the importance of force protection. No longer relegated to a 'combat service support' annex, force protection for deployed forces could have air and ground elements. The need to protect air platforms may encompass sweep, escort and SEAD or may, if events turn against us, encompass combat search and rescue (CSAR). Or, force protection may require a whole raft of ground defences from short-range ground based air defences to area and perimeter defences. If we get it wrong, as the terrorist attack against Dhahrain demonstrates, the entire intervention strategy is called into question.

Conclusion

This summary is offered as a snapshot of how air power doctrine can be adapted to suit the needs of joint and multinational forces. The fundamentals, however, do not change. Just as the men and women in the aircraft and in the tasking loop need to be aware of the doctrine and apply it flexibly to the given missions or scenario, so doctrine itself needs to continue to evolve and adapt to the needs of future conflict.

This article has examined the evolution of air power doctrine and highlighted the baggage it has created. As we peek around the corner of the next Millennium, the only prediction worthy of the description is that both the next crisis and the next challenge for air power will be unforeseen. The challenge, for airmen and academics alike, is to reflect on the changes in the security environment in which we operate so that our doctrine does not become the dogma that can destroy the very flexibility that air power seeks to create.

Notes

1 Oxford Shorter English Dictionary, Oxford, 1985, 354

2 British Defence Doctrine, HMSO, 1996, G5

3 In subsequent editions of the Journal, we plan to re-publish extracts from historical documents to highlight how the issues with which we grapple are not new

4 See W Jackson & D Bramall, 'The Chiefs', Brasseys, London 1992, Chapter 5, 109-143, for a fascinating account of the struggles of the 1920s, the Geddes Committee and the role of the fledgling Air Ministry staff in fighting off the doomsayers

5 See C Bowyer, History of the RAF, London, 1977 for details

6 See P Mielinger, 'Paths of Heaven' AU press, Alabama, USA, 1997, Chapters 1-4 for an outstanding survey of the early debates on air power doctrine. In particular, M Clodfelter gives a detailed account of the Mitchell 'affair' in Chapter 3

7 See P Towle, Pilots and Rebels, Brasseys, London, 1989, 11-55 and D Omissi, Air Power and Colonial Control, 1919-1939, Manchester, 1990, 210-215, for a realistic appraisal of air

8 John Terraine's 'Right of the Line' remains arguably the most masterly account of the RAF's adaptation to the reality of WWII

9 For a good summary of the air war in Korea, see M Hastings, 'The Korean War', Michael Joseph, London, 1985, Chapter 14, 253-270

10 A recent US work: J A Winnefeld & D A Johnson, 'Joint Air Operations', RAND, Maryland, USA, 1939, Chapter 5, 39-60, offers a critical appraisal of the relative performance of US air arms in Korea

11 The lacuna in RAF doctrine was filled with AP 3000 which was compiled and published by D Def S (RAF) and issued to all RAF units in 1988. The second edition, which took account of the lessons learned in the Gulf War, was published in 1993; the third edition will be published in 1998

12 This USAAF school at Maxwell Field, Alabama was the focal point of American airpower study and influence by "Billy" Mitchell, and was one of the major inter-war proponents of strategic

13 See M R Gordon & General B E Trainor, 'The General's War', Little Brown, New York, 1995, for a more sceptical view of the planning for and conduct of the air campaign during the Gulf War

14 See M Gilbert, 'World in Torment', Churchill Biography Vol IV, 1917-22, Minerva, London, 1990. 199-204 for a description of the complexities and agendas of the period

15 USAF - Air Force Doctrine Document 1 "Air Force Basic Doctrine", Sep 97, pp 41-42

16 As described in JDP1 - JFACC Doctrine