Article

Purple Air Power: The Future Challenge

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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 C² 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.