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**THE FUTURE OF AIR POWER:
CONCEPTS OF OPERATION**

By

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About the Author

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He is a graduate of the United States Air Force Air Warfare Course and of the RAF Staff College. He was the first Director of Defence Studies for the Royal Air Force and his last appointment before retirement in 1989 was Air Secretary. From 1984 to 1994 he was Air Power Research Director of the UK-based Foundation for International Security and from 1989 a senior research fellow at the University of Birmingham, before being appointed to a personal chair in 1996.

For twenty years he has published and lectured worldwide on air power and international security. He is a frequent defence analyst for the BBC and other international media. His last book, *Air Power: A Centennial Appraisal*, was published by Brassey's in 1994 and reprinted in 1997. His most recent study, *The Aerospace Revolution: Role Revision and Technology*, will be published by Brassey's in 1998.

In the last three years he has contributed to forward policy studies for the United States, Germany, Swedish, Netherlands, and Australian and Royal Air Forces. He is currently working on the aerospace implications of NATO enlargement for European security.

INTRODUCTION¹

In recent years we have moved from the reasonably confident assumptions of the Cold War to the uncertainties of crises and conflict in many regions of the world. In this paper I shall argue that we can in fact make a number of confident predictions about the next couple of decades, with considerable implications for the application of air power. We need, however, to re-evaluate our conceptual framework, which, despite all our efforts, is still too heavily rooted in experiences which have now lost much of their original relevance. We need a new aerospace paradigm for the 21st Century.

Such a re-evaluation of the way we should approach our business is as relevant to the smaller air forces as it is to the USAF, which now deploys unequalled and unprecedented aerospace power.

Predictions

Amidst the uncertainties of our operating environment in the foreseeable future, that is, in the next 20 years, I would make eight confident predictions. From the point of view of the Atlantic Community and friends, which will have a profound influence on air operations.

They are the following:

- a. There is no longer any surface threat to territorial integrity.
- b. Any external threat by missile or by air, even to southern allies, is several years away.
- c. Elsewhere in the world, armed force will remain an arbiter of international relations, in crises, civil wars, peace-keeping, and unconventional warfare through to large scale regional conflict.
- d. International interdependence will increase and, with it, the need to protect national interests well beyond national frontiers.
- e. Defence budgets will continue to decline.
- f. Governments will continue to have a choice about whether to commit armed forces, how many and for how long, leading to sensitive assessments of political, economic, military and psychological costs and benefits.
- g. Advanced technology will continue to proliferate, stimulated by market competition in aircraft, weapons and systems. We will know who is buying equipment but not who will inherit. Readily available, comparatively cheap,

¹ This paper was originally prepared for the RNLAf Air Power Colloquium held in The Hague in November 1997, and is reprinted here with the kind permission of the RNLAf and the author. While in places the paper is couched in terms of NATO and European/Atlantic settings, its observations are relevant to any advanced air power.

efficient but easy to operate surface-to-air weapons will be particularly popular among countries lacking the resources to develop strong air forces.

- h. We will face alternative strategies from countries and organisations which wish to deter, avoid or neutralise our air power, based on terrorism, guerilla warfare, ballistic/cruise missiles and weapons of mass destruction. The opposition is unlikely to be concerned about inflicting collateral damage or indiscriminate casualties. All expeditionary forces and, possible, homelands will become vulnerable.

The Need for Versatility

The greater the range of possible scenarios, the greater the need to exploit the versatility of airpower. The narrower our technological advantage becomes, the greater the need to preserve and to widen it.

Across all levels of intensity, air power's versatility offers choices: of duration, scale and continuity of commitment; of variety, distribution and location of targets; of variable intensity and weight of attack. Versatility is reinforced by the other characteristics of air power. Its reach extends across distant coastlines and frontiers. Its speed is measured by the clock rather than by the calendar. Its precision is measured in feet rather than miles. Its perspective extends from the earth's surface to space and from here to the other side of the earth.

These characteristics are shared in varying degrees with other kinds of military power, but it is their synergism which confers upon air power a unique versatility in so many different operational scenarios.

Technological advantage can be extended through coordination of air and space operations, all-weather multi-mode weapons and systems, precision and information dominance. They are not cost free, but they are cost-effective because they compound the inherent synergism in air power itself.

Conceptual Revision: The Legacy of Total War

To exploit our technology advantages to the utmost, we should reconsider some of our most basic concepts. We are not just talking generally about moving from the Cold War to a different set of operational environments; the shift has a very deep, unique significance for air forces.

I use the term 'air forces' advisedly, because Army, Navy and Marine air arms may seek to extend their battlefield or littoral reach, but they remain 'arms' of forces dedicated to operations on land and sea which existed centuries before air power.

Air power is the product of one century: a century of total warfare. World War I was a global conflict which destroyed three empires and mortally wounded two others. World War II expanded from its European origins across the globe, drawing conflicting political systems into a fight to unconditional surrender and destruction. A similar outcome undoubtedly awaited a mismanaged Cold War.

In each case, political and territorial control of Europe was at stake. Military strategy was dominated by massive ground force confrontation and driven by the need to defend and hold ground.

Over land, air power either supported ground forces in 'tactical' operations or sought to strike directly at the enemy's political and industrial heart by 'strategic' bombing. After World War I, it was hoped that 'strategic' attacks would in the future quickly and cheaply avoid the need for the devastating attrition of land battles. Instead, in World War II, the impact of strategic bombing was only achieved by extending attrition to the skies. In the Cold War, it became synonymous with nuclear deterrence or nuclear devastation.

The Cold War was an age of priority funding, threats to survival, territorial focus and big battlefields. Other conflicts - in Korea, Vietnam, the Falklands - were sideshows where we might learn some lessons to apply, or avoid, in the real conflict with the USSR, focused here, on the ground, in Europe.

This third, unfought world war not only dominated air power concepts, but distorted them.

The apparent vindication of Douhet at Hiroshima was quickly subsumed and distorted when strategic bombardment became synonymous with the activities of Strategic Air Command and, to a lesser extent, with the roles of RAF's Bomber Command and the French nuclear bomber force. In some minds, air power *was* strategic bombing. The immeasurable impact of the Berlin Airlift on the destiny of Europe was ignored; the continuous irreplaceable contribution of reconnaissance *throughout* the Cold War received little public acclaim from air power enthusiasts.

This vision of the early theorists outran the technical capacity of the age, leading to unfulfilled expectations and provoking resentment and hostility - as well as myopia, disbelief and straightforward blood mindedness - among the other services.

The theorists emphasised the novelty of air power to the exclusion of principles common to all dimensions of warfare. They failed, thereby, to anticipate the stimulation of defensive countermeasures and the common features of attrition. Consequently, air power came to be evaluated by its failure to match its promises rather than by its actual, enormous impact on 20th Century warfare.

Strategic and Tactical: Obsolescence?

We should now rethink the concept of strategic bombing, and at the same time question the assumption that tactical air operations will continue to be associated with the traditional battlefield. In due course, an opponent may arise who *can* compete with similar resources to those of the US and friends, including large scale ground, naval and air forces, but not at least before 2017.

Military staffs worldwide have now had six years to study the lessons of Desert Storm. We have carefully looked to see how we can do better next time. Others, whose interests may be potentially hostile to the West, have sought entirely different lessons. They have noted Saddam's mistakes and his dependence on discredited

Soviet doctrine, equipment and training. They are aware that they cannot compete with US technological superiority, especially in air power. They are likely to seek to evade the traditional battlefield, preferring instead to rely on dispersal, deception, concealment and mobility, especially of surface-to-air missiles (SAMs), medium range ballistic missiles (MRBMs), and command, control, communications and intelligence (C³I). Some conflicts will not be concerned with control of territory at all. Indeed, the traditional descriptions of air operations as ‘tactical’ or ‘strategic’ may no longer be helpful.

Already, in the planning for Desert Storm, there was a difference of opinion between those who wished air power to be used ‘tactically’ in direct support of Coalition ground forces in the Kuwait sector and those who wished to attack ‘strategic’ infrastructure and leadership targets in Baghdad and elsewhere in Iraq. The final compromise was hugely successful but, in the process, Iraq’s National Guard, which was both the strategic reserve for Kuwait deployment and the military foundation of Saddam Hussein’s political position, escaped with little damage. It did not fall neatly into either conceptual category.

Meanwhile ‘strategic’ B-52s carpet bombed Iraqi ground forces and ‘tactical’ F-177s struck targets in Baghdad.

Later, in the Balkans, Bosnian Serb capacity to defy diplomatic pressure was eliminated in less than two weeks’ bombing of supply routes and war stocks. These traditional ‘tactical’ targets now had enormous strategic significance because of Serbian dependence on them to achieve their political objectives. They were hit by F-16s, Harriers and Jaguars. In the operational and political environment of the former Yugoslavia, direct action by NATO air forces against the irreplaceable core of Bosnian Serb resistance illustrated air power’s ability to reach beyond ground forces just as much as the earlier attacks on downtown Baghdad.

If we are to continue with the label of ‘strategic’ air attack, it should be more accurately defined, not by the aircraft or weapon, nor by the distance covered, nor even by the nature of the target, but by the direct relationship of a target to the overall political objective. Similarly, our ‘tactical’ contribution may have no connection whatsoever with a traditional battlefield, but may be in support of a threatened UN detachment or to harass irregular forces.

The Chimera of Independence

I have another concern about terminology, which really is more than pedantry.

I now believe we offer hostages to fortune every time we refer to ‘independent’ air operations. On first hearing the expression in World War I, Marshal Foch is said to have observed ‘Independent of whom? God?’ *We* know what we mean - air operations independent of activity elsewhere by naval or ground forces. But, even then, independent air operations have always been harnessed to overall strategy and on several occasions have, in fact, had considerable influence on surface operations elsewhere: the allied bombing campaign against Germany in World War II is a good example.

Nor is there anything unusual in military operations being undertaken independently by one service or arm. Submarines can operate individually; ground forces may deploy independently against terrorists or insurgents.

We are, however, now in a period when combined services in a coalition, and joint service components in expeditionary forces, are increasingly likely. We need to distinguish very carefully and publicly, between the need for an independent armed service whose professional *raison d'être* is the military exploitation of aerospace, and any erroneous implication that such independence depends on a need to carry out 'independent' military operations.

A Revised Paradigm

In our view new environments, air power can be applied in three ways, suggesting a new paradigm for the 21st Century. Actual operations may be similar in all three modes, but the considerations and approach are quite different in each. The paradigm applies to many different scenarios, from low level peace support to conventional large scale war. It cuts across the traditional 'strategic'/'tactical' divide and offers the opportunity to retitle the old category of 'independent' operations more appropriately.

Shaping The Environment

The first application or contribution of air power to joint service operations is to prepare or shape an environment in which surface forces may be more effectively deployed.

The Allied air forces did it successfully before the Normandy landings in 1944. The Luftwaffe failed to do it in 1940 and Operation Sea Lion was abandoned. Now, 'aerial preparation' will have high priority. Its objectives will include:

- a. denying an opponent or peace breaker his choice of strategy;
- b. creating favourable circumstances to employ our own chosen strategy; and
- c. reducing the requirement for friendly surface forces, thereby reducing costs, risks and casualties.

Aerial preparation will exploit air power's responsiveness, reach, penetration, precision and versatility. It may reduce an opponent's (or peace breaker's) fighting capacity by destroying war stocks, blocking reinforcement and resupply, denying manoeuvre and concentration, disrupting C³I and enforcing blockades and embargoes.

It will create a favourable air situation for surface force deployment into theatre, for establishment of information dominance by surveillance and reconnaissance and for denial of similar opportunities to the opponent.

A need for aerial preparation must be identified, together with the longer term contribution of air power, before surface expeditionary forces are deployed, to ensure that jointery will be enhanced and not impeded as happened in Bosnia.

Aerial preparation laid the foundation for victory in Western Europe in 1944, in the Gulf in 1991 and in Bosnia, ultimately, in 1995.

Support

The second contribution of air power to joint or coalition operations is in support of surface forces once they have been deployed, in various levels of conflict intensity. Activities will include:

- a. providing surface forces with freedom from hostile air or missile interference,
- b. curtailing interference from both hostile surface forces,
- c. inhibiting hostile manoeuvre,
- d. denying hostile concentration,
- e. denying hostile reconnaissance,
- f. disrupting hostile C³,
- g. providing mobility to friendly forces,
- h. providing resupply to friendly forces, and
- i. providing reconnaissance.

Providing firepower support. If all other activities have been carried out effectively - including the initial political appraisal and deployment of surface forces - firepower support should be an unusual request and only *in extremis*.

Hopefully, however, it will remain a very powerful deterrent in many circumstances.

For maximum exploitation of aerial support, there are several essential prerequisites. They include:

- a. thorough joint service concepts, planning and training;
- b. joint targeting - for example, including artillery or special forces - against hostile air defences or air heads;
- c. a single theatre commander who, if not an airman, should have a single air adviser/commander to coordinate all air operations in theatre; and
- d. multi-layered air-surface communications as near to real time as possible.

Distinct Operations

The third contribution of air power is currently called independent action. I prefer the description 'distinct', which is defined in the English Oxford dictionary as, 'Different of kind, unmistakable, positive'.

In some cases, possession of territory may not be an issue. Or our government may be unwilling to commit surface forces. Or the requirement may be punitive, as in Libya in 1986, or pre-emptive, as against Osirak in Iraq in 1981. Modern air power can attack strengths or weaknesses beyond the reach, capacity or responsiveness of friendly surface and naval forces.

In the previous era, 'strategic bombing' was a blunt instrument. Now, in distinct operations, precision guided munitions have transformed the bludgeon into a rapier which, on many occasions, may be wielded directly in support of policy. It may be brandished for deterrence or coercion. It may be inserted or withdrawn in cadence with diplomatic and other coordinated pressures. Distinct, direct air action can be taken at all levels, from response to state inspired terrorism, to specific strikes in large scale conflicts.

An air force which is known to have long reach, with or without flight refuelling, employed by a government which is known to have the determination to use it, can directly influence policy by its very existence. An increase in alert states and augmentation of front line personnel are the modern equivalent of early 20th Century mobilisation. The big difference is that such action can take place swiftly to accompany diplomatic pressure worldwide. It is the air equivalent of Mahan's 'fleet in being' except that diplomacy may now be supported without the expense of surface deployment. The gunboat can now arrive without moving from its base.

Deterrence is as relevant to peace inducement as it is to major nuclear or conventional confrontation. In Bosnia, the contribution of air power was delayed by obvious lack of UN consensus and political determination. Consequently, the Bosnian Serbs were not inhibited from escalation nor coerced to serious negotiations until operation Deliberate Force was launched in September 1995.

Limited War Targeting

Air power's ability to strike directly and distinctly at a source of strength, a critical asset or a distant vulnerability can be exploited in many scenarios, but we also need to re-evaluate the targeting habits of previous eras.

For example, if attacks on industrial and economic infrastructure are authorised, they should either have a swift impact or threaten an unacceptable penalty for continued opposition, within a desired time-scale. Even then, such attacks should take into account considerations of post rehabilitation and reconstruction. In other words they should be consistent with the limits of political circumstances, which could be frustrating for airmen.

Political constraints chafed in Vietnam, where a gradualist bombing campaign interspersed with pauses for diplomacy was exploited by North Vietnam to repair

damage and reinforce air defences. Arguably however, the weakness then was not in the attempt to coordinate bombing with diplomacy, but in failing to prevent North Vietnam exploiting the pauses. In future campaigns, diplomatic negotiations should expressly forbid military reconstruction or reinforcement, and be enforced.

Now we must emphasise the diplomatic responsiveness of distinct air power: especially with the accuracy of the PGM requiring very small numbers of aircraft. And that means looking again at 'gradualism', not instead of concentration of force as in Desert Storm, but in addition to it.

There is little historical justification, even in total war, for bombing campaigns designed to weaken civilian morale and thereby to exert pressure on government. When Trenchard asserted that the impact of bombing on morale was twenty times more effective than attacks on 'material', he was reflecting the negligible destructive power of bombs in 1918 rather than their decisive impact on morale.

Since then, 'morale' and 'will power' have remained elusive targets. An autocratic ruler will be unmoved by public suffering and will suppress any complaints. A democratic public is more likely to respond as Britons did during the Blitz and as Americans did after Pearl Harbour. Fanaticism is even more likely to call for vengeance, not for submission.

Moreover, when considering attacks designed to weaken public will, there is now the CNN factor to take into account. Pictures of civilian casualties or misery make good media copy but are not air power friendly. Bombing still carries the emotional baggage of Guernica, Dresden and Hiroshima. A dictator like Saddam Hussein will make propaganda capital out of destruction of water, sewerage, electricity and other public utilities. Such use of air power is more likely to jeopardise policy, especially one depending on international support, than to enhance it.

Hostile leadership may be a legitimate and productive target where autocratic decision making is indisputable. But even then, there needs to be a pliant alternative available who could sustain the new government's position and deliver the terms of a settlement. The imposition of military defeat is usually more productive than the creation of heroic martyrs.

For all these reasons, I would argue that, for the foreseeable future, our deep 'distinct' targets should be clearly and directly associated with an opponent's military capacity to achieve his political objectives.

Lower Intensity Operations

In unconventional warfare, where an opponent or belligerents are not fighting in traditional formations, air power may deny sanctuary to insurgents, inhibit concentration of force and deny an opponent the opportunities and advantages of force escalation.

In peace inducing operations, air power may be given the specific task of reducing the military force being used by a belligerent to extract concessions or to ignore the conditions of a peace settlement. In such circumstances, air power becomes a very

cost-effective force equaliser. It may be swiftly deployed into secure bases in neighbouring territory and equally swiftly recalled without the military penalties and cost of extraction of ground forces. In between times, it may be held at various levels of readiness, responding in tune with diplomatic pressure but without the problems of sustaining ground forces in a hostile country during a cease-fire. It can remain within range on bases indefinitely: a most cost-effective attribute in long term peace-keeping or enforcement.

Overall, air power offers the advantages of minimum commitment, high visibility, comparatively low casualties, reduced costs, residual influence and ease of extraction in the unrewarding and unpredictable peace inducing-environment.

If insurgents, irregulars, or peace breakers receive external support, air power can reinforce diplomatic pressure on its source. Apprehension of interception of individual terrorists will remain the task of surface security forces, but any external sponsor will be vulnerable to air power's long reach. Operation El Dorado Canyon against General Ghaddafi is a good precedent for the future.

In all these scenarios, interventionist governments are pursuing limited objectives, sensitive to the costs and casualties of extended commitment and to the political and psychological implication of defeat and ignominy. Air power offers an alternative response in a manner, at a time, with a duration and in a location at the choice of the friendly government.

Constabulary action by professional air forces may be requested against international crime, such as drug smuggling or piracy. Surveillance and reconnaissance can be extended. Drug crops, processing plants, aircraft and boats together with high value tangible products of illegal profits, such as palatial residence, could be destroyed where such items were beyond the reach or inclination of local enforcement authorities. Such activities would not stop international crime, but they would depress the market flow, reduce the material advantages to be gained from it and introduce penalties commensurate with the scale and brutality of the illegal activities themselves.

Air power is particularly fitted to mount humanitarian operations in response to natural disaster, in otherwise non contentious political circumstances. Such opportunities for relief, goodwill and public approbation should continue to be grasped by air forces which may have fewer combat opportunities to demonstrate their value and professional competence.

Finally, one problem unrelated to any specific environment will require a contribution one way or the other from air power. Proliferation of weapons of mass destruction may be curbed by international treaty. If so, the treaty, like other arms control agreements, will require monitoring by air and space surveillance. If not, provided that obstacles of deception, concealment, mobility and protection can be overcome, the pre-emptive strike by Israel on the Iraqi nuclear installation Osirak offers a precedent for a more controversial solution to the problem.

The New Battlespace

Whatever the nature of air power operations - in preparation, in support, or distinct and direct - there is one common feature. Air power's battlespace is not confined by the forward line of troops, or Apace range, or coastlines, or frontiers. Our battlespace is where we want it to be: constrained only by our reach and information. That principle is as relevant to European air force as it is to the USAF.

It is sometimes argued that the dispatch of ground forces shows greater commitment than the use of air power. We should make two points in rebuttal. First, the deaths of US marines in Beirut and helicopter crews in Mogadishu swiftly and tragically ended those 'commitments'. And second, it is the perception of the opponent about commitment which matters, not the would-be partners'. A powerful response with reduced risk is likely to make greater impact on an opponent than presenting him with an opportunity to exploit favourable local conditions on the ground.

We must emphasise to our political masters that the greater their concern about casualties the greater the reason to exploit our technological advantages and to reduce the size of friendly forces exposed to hostile action to the minimum. That means exploiting air power, but being prepared to accept some losses.

Meeting the Requirement

In preparing for such a range of uncertainties in a period of accelerating technological proliferation, there are no easy answers. I would simply re-enforce the view that technical superiority is not a luxury: we will meet sophisticated opposition, albeit in small quantities, at all levels of intensity anywhere in our battlespace. In virtually any foreseeable circumstances, the Atlantic Community and friends will need to offset numerical inferiority, distance, accessibility, and vulnerability to indiscriminate weaponry by technological superiority: in particular by information dominance and economy of effort.

Conclusion

I have left many issues untouched, not least the future balance of appropriation between manned aircraft, UAVs and satellites and the ongoing contention between offensive and defensive systems. But, as Professor Peter Paret famously observed, it is not the possession of technology, but its intellectual mastery, which will determine its significance in conflict.

My central thesis is that while our technology is lifting us into the 21st Century, our formative concepts remain rooted in a bygone age. The labels 'tactical' and 'strategic' are relics of wars dominated by battlefields and unrestricted international fights to the death.

Now, in limited joint service and coalition warfare, we must reconstruct a new paradigm, a new conceptual framework, in which air power will, in many different scenarios, prepare the way for surface forces, support surface forces or operate distinctly at distances in ways and against targets beyond the reach and capacity of surface forces.

In an environment of unpredictable circumstances and unpredictable political response, we can offer a highly versatile, politically attractive proposition.

We must affirm that air power - increasingly aerospace power - can be a most cost-effective, minimum risk, highly responsive, minimum casualty option in many different scenarios: sometimes before, sometimes alongside and sometimes distinct from other armed services. That is an option which can be offered whatever the size and capacity of our air forces.