

**COMMAND AND CONTROL
OF
BATTLEFIELD HELICOPTERS**

THE SEARCH FOR A JOINT
APPROACH

Martin Sharp

Air Power Studies Centre
Canberra
1998

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TABLE OF CONTENTS

Acronyms and Abbreviations	viii
List of Figures	x
Introduction	xi
Part One: The Fundamentals	1
Chapter One: The Fundamentals of Command and Control	3
Introduction	3
Command and Control Terminology	3
Command and Control	4
States of Command	5
Supporting Relationships	6
Army Terminology	7
Inter-Service Relationships	7
Styles of Command	8
Chapter Two: Helicopters and Air Power Doctrine	13
Introduction	13
Doctrine	13
What is Doctrine?	13
Types of Doctrine	14
Air Power Doctrine	14
What is Air Power?	14
Helicopters and Air Power	15
Air Campaigns	16
Air Power Roles for Helicopters	18
Counter-Air Campaign	18
Anti-Surface-Force Campaign	19
Strategic Air Campaign	20
Combat Support Air Operations	21
Air Transport Operations	21
Search and Rescue	21
Principles of Command and Control of Air Power	22
The Air Command and Control Process	22
Conclusion	25
Chapter Three: Helicopters and Land Operations	27
Introduction	27
The Conduct of Operations	27
What is Manoeuvre?	28
Core Functions	29
Command and Control of the Deep Battle	31
The Role of Helicopters in Manoeuvre	33
Air Mobility	34

Command and Control of Air Manoeuvre	35
Other Helicopter Roles in Land Operations	36
Combat Tasks	36
Combat Support Tasks	37
Combat Service Support Tasks	39
Special Operations	40
Conclusion	41
Part Two: Historical Analysis	43
Chapter Four: Evolution of Helicopter Forces in the UK	45
Introduction	45
Early Developments	46
Inter-Service Relations	46
Helicopters Enter the Fray	47
Post-War Years	49
Shaping the Services	49
Helicopter Requirements	50
The 1950s: Conflict and Division	51
The Malayan Emergency	51
Joint Experimental Helicopter Unit and Suez	53
The Army's Own Air Force	54
Short Range Transport Force	54
Centralisation and Integration	55
New Helicopters	56
The 1960s: Counter-Insurgency and Defence Reforms	57
Borneo	58
Aden	58
Developments in Whitehall	60
The 1970s: Consolidation	63
Restructuring the Army Air Corps	63
RAF Support Helicopter Force	64
Northern Ireland	65
The 1980s: Increasing Capabilities	66
Falkland Islands	66
Developments in the Support Helicopter Force	67
Developments in the AAC	68
Airmobility Revitalised	69
Ownership Back on the Agenda	69
The 1990s and Beyond	70
Gulf War	70
Options for Change	74
Summary	75
Chapter Five: The Australian Experience	77
Introduction	77
Early Developments	77
Inter-Service Relations	77
Introduction of Helicopters	79
Army Aviation Formed	80

RAAF Helicopters	82
Vietnam	83
The 1970s and 80s	85
Transfer of Ownership	87
Current Structure of Australian Army Aviation	91
Aviation Support Group	91
Aviation Regiments	93
Army Aviators	93
Operational Command and Control	94
Army Aviation into the Future	95
Conclusion	96
 Chapter Six: United States Army Aviation	
99	
Introduction	99
Evolution of United States Army Aviation	99
Early Evolution	99
Post-War Years	100
Vietnam	102
The 1970s: The Search for a New Doctrine	104
The 1980s: The AirLand Battle Concept	105
The 1991 Gulf War	109
The 1990s: The New World Order	111
Current Structure of United States Army Aviation	112
Aviation at Echelons Above Corps	112
Aviation at Corps	113
Aviation at Division	113
Special Operations Aviation	117
Command and Control	117
Internal Command and Control of Aviation	118
Army Airspace Coordination	118
Aviation Maintenance	119
Army Aviators	119
Army Aviation into the Future	120
Conclusion	120
 Part Three: Options for the United Kingdom	123
 Chapter Seven: The Current United Kingdom Framework	125
Introduction	125
Higher Defence Arrangements	125
Single Services	126
Royal Navy	127
Army	129
Royal Air Force	131
Joint Support Structures	133
Defence Helicopter Flying School	133
Defence Helicopter Support Agency	133
Third-Line Support	133
NATO Structures	134
Higher Command Structure	134

Reaction Forces	134
UK Helicopter Assignments to NATO	135
NATO Airspace Management	135
Operations Outside the NATO Area	136
Former Republic of Yugoslavia	136
National Operations	138
Northern Ireland	138
National Joint Operations	139
Conclusion	140
 Chapter Eight: Influencing Factors	
141	
Introduction	141
Strategic Considerations	141
The Security Environment	141
Defence Policy	142
An Army View of Future Warfare	143
View One	143
View Two	144
Deductions	144
Economic Factors	144
Cultural Factors	145
Technological Factors	148
Attack Helicopters	149
Support Helicopters	149
Conclusion	150
 Chapter Nine: The United Kingdom Helicopter Force	151
Introduction	151
Basic Considerations	151
Operational Command and Control	153
Attack Helicopters	154
Employing the Air Manoeuvre Brigade	157
Utility and Liaison Helicopters	157
Support Helicopters	158
Special Forces	159
Search and Rescue	159
Northern Ireland	160
Naval Helicopters	160
Higher-Level Management	160
Single-Service Management	160
Defence Helicopter Force	161
Conclusion	165

ACRONYMS AND ABBREVIATIONS

AAC	Army Air Corps
AC	Army Cooperation
ACA	Airspace Control Authority
ACO	Airspace Control Order
ADF	Australian Defence Force
ADFP	Australian Defence Force Publication
ADP	Army Doctrine Publication
AFM	Air Force Manual
AH	Attack Helicopter
AHQ	Air Headquarters
AOP	Air Observation Post
AJP	Allied Joint Publication
AMF(L)	Allied Command Europe Mobile Force (Land)
AOC	Air Officer Commanding
AOCinC	Air Officer Commanding-in-Chief
AOCC	Air Operations Control Centre
AP	Air Publication
ARCENT	Army Forces Central Command
ARRC	Allied Command Europe Rapid Reaction Corps
ATACMS	Army Tactical Missile System
ATF	Australian Task Force
ATO	Air Tasking Order
AVN	Aviation
BAI	Battlefield Air Interdiction
BAOR	British Army of the Rhine
BDE	Brigade
BMD	British Military Doctrine
CAG	Carrier Air Group
CAOC	Combined Air Operations Centre
CAS	Close Air Support
CENTAF	Central Command Air Force
CGS	Chief of the General Staff
CinC	Commander-in-Chief
CNS	Chief of the Naval Staff
CSAR	Combat Search and Rescue
DCS	Defence Costs Study
DER	Defence Efficiency Review
DHFS	Defence Helicopter Flying School
DHSA	Defence Helicopter Support Authority
DIV	Division
DoD	Department of Defence
FAA	Fleet Air Arm
FAC	Forward Air Controller
FM	Field Manual
FMFM	Force Marine Field Manual
FSCL	Fire Support Coordination Line
GOC	General Officer Commanding
HQ	Headquarters

HQAST	Headquarters Australian Theatre
IFOR	Implementation Force
IRA	Irish Republican Army
JAAT	Joint Air Attack Team
JEHU	Joint Experimental Helicopter Unit
JFACC	Joint Force Air Component Commander
JFC	Joint Force Commander
JHSU	Joint Helicopter Support Unit
Jt Cdr	Joint Commander
JRDF	Joint Rapid Deployment Force
JWP	Joint Warfare Publication
LBH	Light Battlefield Helicopter
LUH	Light Utility Helicopter
MAOTS	Mobile Air Operations Teams
MLRS	Multi-Launch Rocket System
MLW	Manual of Land Warfare
MoD	Ministry of Defence
NATO	North Atlantic Treaty Organisation
OCA	Offensive Counter Air
PJHQ	Permanent Joint Headquarters
RAAF	Royal Australian Air Force
RAF	Royal Air Force
RAN	Royal Australian Navy
REME	Royal Electrical and Mechanical Engineers
RFC	Royal Flying Corps
RN	Royal Navy
RNAS	Royal Naval Air Service
SAS	Special Air Service
SACC	Supporting Arms Coordination Centre
SFOR	Stabilisation Force
SH	Support Helicopter
SOCENT	Special Operations Centre Central Command
SRAFONI	Senior RAF Officer Northern Ireland
SRT	Short Range Transport
TACP	Tactical Air Control Party
TOW	Tube-launched, Optically-tracked, Wire-guided
TRADOC	Training and Doctrine Command
UAV	Uninhabited Aerial Vehicle
UK	United Kingdom
UN	United Nations
UNAAF	Unified Action Armed Forces
US	United States
USAF	United States Air Force

LIST OF FIGURES

Figure 1.1	Development of Command and Control Styles	10
Figure 1.2	Interaction of Command and Control Systems	11
Figure 2.1	Command and Control of Air Platforms	23
Figure 3.1	The Operational Framework	30
Figure 3.2	Control of Operations	32
Figure 4.1	Organisation of the AAC in BAOR	64
Figure 4.2	Organisation of 24 (Air Mob) Brigade	72
Figure 5.1	Organisation of Australian Army Aviation	92
Figure 5.2	Typical Organisation of Australian Army Future Task Force	95
Figure 5.3	Structure of Proposed Multi-Role Aviation Battalion	95
Figure 6.1	Division 86 Aviation Brigade Structure	107
Figure 6.2	Organisation of Aviation in V (US) Corps	114
Figure 6.3	Typical Organisation of Aviation in a US Army Heavy Division	115
Figure 6.4	Organisation of Aviation in 101st Airborne Division (Air Assault)	116
Figure 7.1	Organisation of Helicopter Forces in the Royal Navy	128
Figure 7.2	Organisation of Aviation in the British Army	130
Figure 7.3	Organisation of Helicopters in the RAF	132
Figure 8.1	Army and RAF Cultural Paradigms	147
Figure 9.1	Proposed Organisation of an Air Manoeuvre Formation	156
Figure 9.2	Proposed Organisation of the United Kingdom Defence Helicopter Force	162
Figure 9.3	Proposed HQ Organisation of the UK Defence Helicopter Force	163

INTRODUCTION

Since the end of the Cold War, defence planners have had to deal with greater strategic uncertainty as they have attempted to adapt forces to the new environment. Threats to national security have become more diverse and less tangible. Greater uncertainty has been accompanied by large reductions in defence spending in many countries around the world, forcing military organisations to search for greater efficiencies. At the same time, there has been a widespread recognition that most future operations will be joint (multi-Service), combined (multi-national), or a combination of the two.¹ Many countries have faced these challenges and taken steps to reshape their defence forces. Two such countries are the United Kingdom (UK) and Australia, which, although their immediate strategic circumstances vary, share a common heritage and have many parallels in their defence organisations.

In the UK, there has been a greater emphasis on a joint approach to operations with the establishment of a Permanent Joint Headquarters (PJHQ)² and a Joint Rapid Deployment Force (JRDF).³ Similarly, in Australia, the command and control structure has been revised with the establishment of a joint Headquarters Australian Theatre (HQAUST).⁴ These initiatives are being matched by the development of joint doctrine for operations. Despite these moves towards 'jointery', however, both the UK and Australia have preserved the individual Services as the basis for raising, training and sustaining combat forces. Both countries have also looked at ways of increasing the efficiency of their defence forces, most recently through a Defence Costs Study (DCS) in the UK, and a Defence Efficiency Review (DER) in Australia. Implementing the changes recommended in these reviews should lead to financial savings through greater coordination of activities across the Services. Nevertheless, there is likely to be continuing pressure on defence budgets, and there will be a continuing need to search for efficiencies. Any area of defence activity where there are overlapping capabilities and duplication of functions across the Services offers the potential for greater rationalisation.

One such area is the operation of helicopters. In the UK, the Royal Navy, Royal Marines, British Army and the Royal Air Force (RAF) all operate helicopters, resulting in overlapping capabilities and, in some cases, duplication of support functions. Although there have been a number of initiatives to rationalise some helicopter support activities, such as the establishment of a single Defence Helicopter Flying School (DHFS) and a Defence Helicopter Support Authority (DHSA), there may still be scope for further integration in both the operational and support areas. In Australia, operation of helicopters has been consolidated in the Royal Australian Navy (RAN) and the Army, following the transfer of battlefield helicopters from the Royal Australian Air Force (RAAF) to the Army in 1988. However, the RAAF

¹ *Stable Forces in a Stronger Britain*, Statement of the Defence Estimates 1995, Command 2800, Her Majesty's Stationery Office, London, p. 29.

² The PJHQ will draw together contingency planning, coordinate joint operational activities, joint training and exercises, and provide a focus for joint doctrine. It will also incorporate the core of a deployable headquarters, with trained staff who can rapidly and efficiently establish a Joint Force Headquarters in a theatre of operations. *Ibid.*, p. 31.

³ The JRDF is intended to strengthen Britain's existing capability to project power quickly and potentially worldwide in support of British interests. *Ibid.*, p. 30.

⁴ General J.S. Baker, AC, Chief of the Australian Defence Force (CDF), 'Command of the ADF', *Journal of the Royal United Services Institute of Australia*, Vol. 17, November 1996, p. 30.

continues to provide some logistic and technical support for Army helicopters and there continues to be some duplication of functions between the Services.

This study examines the command and control of helicopters in the UK and aims to identify optimum arrangements for their command and control. In doing so, it is intended to identify arrangements that provide the most effective command structure coupled with the most efficient management practices. The primary focus of the study is on *battlefield* helicopters since these represent the area of greatest overlap, although management of all military helicopters is also considered. In the context of this study, the term *battlefield helicopter* is intended to encompass helicopters used primarily in the air/land warfare environment (as opposed to the maritime environment). While the study mainly concerns developments in the UK, it also draws on experience from Australia, where the recent transfer of ownership makes an interesting case study. Developments in US Army Aviation, which operates one of the largest fleets of aircraft in the world and has developed an impressive array of capabilities, are also examined.

To address the subject the study is constructed in three parts. Part One is analytical. In Chapter One, some fundamental aspects of the command and control process are addressed. The focus is mainly on military command and control, but management theories from the broader field of the social sciences are also drawn upon. A recurrent theme in the study, and a key issue in command and control of battlefield helicopters, is the relative merits of centralised versus decentralised control, and this issue is discussed in some detail in this chapter. Chapter Two addresses the role of doctrine in the command and control of battlefield helicopters and assesses the nexus between helicopter operations and air power doctrine, using current RAF air power doctrine as the main basis for discussion.⁵ In Chapter Three, the place of helicopters within current concepts of land operations is considered, with particular reference to the British Army's doctrine for operations.⁶

Part Two is mainly historical and considers the development of helicopter forces in the UK and Australia. Command and control of battlefield helicopters has long been a contentious issue between the Services and this study attempts to explain the historical background of each Service's position on this matter. Thus, the study of inter-Service relations, rivalries and confrontations is highly relevant in this context. The historical background also explains how current arrangements evolved and helps highlight lessons learned from past campaigns. The focus here is on the issues concerning command and control of helicopters, rather than providing a treatise of the individual campaigns *per se*. Nor is it intended to provide a comprehensive history of the development of helicopter forces, about which much has already been written.⁷ The UK experience with helicopters is considered in Chapter Four, before examining the Australian experience in Chapter Five. Chapter Six then traces developments in the US with a detailed look at the current structure of US Army Aviation.

Having established the doctrinal framework in Part One, and set the background in Part Two, Part Three looks at current and future issues. The broader command structures in the UK are set out in Chapter Seven so that the place of

⁵ RAF Air Publication (AP) 3000, *Air Power Doctrine*, 2nd Edition, Her Majesty's Stationery Office, London, 1993; and *Air Operations*, RAF Air Warfare Centre, 1996.

⁶ British Army Doctrine Publication (ADP) Vol. 1, *Operations*, Headquarters Doctrine and Training, June 1994.

⁷ See for example, General Sir Anthony Farrar-Hockley, *The Army in the Air: The History of the Army Air Corps*, Alan Sutton Publishing, Stroud, Gloucestershire, 1994; Wing Commander Jack Dowling, *RAF Helicopters: The First Twenty Years*, Her Majesty's Stationery Office, London, 1992; and John Everett-Heath, *Helicopters in Combat: the First Fifty Years*, Arms and Armour Press, London, 1992.

helicopters within these organisations can be established. Chapter Eight examines a number of influencing factors that might shape command and control arrangements in the future, including strategic considerations, the changing nature of warfare, economic factors, and sociological and technological issues. The purpose here is to establish the defence environment within which any command and control system must operate in the twenty-first century. Finally, and perhaps most contentiously, proposals for improving arrangements for the command and control of battlefield helicopters in the UK are set out in Chapter Nine. In essence, it is suggested that a clear distinction is necessary between command and control arrangements at the operational level and those concerned with higher levels of management. It is also argued that no one Service can claim primacy in the operation of helicopters, and a joint approach is essential to avoid wasteful duplication and to maximise the benefits of economy of scale.

PART ONE

THE FUNDAMENTALS

Chapter One

Fundamentals of Command and Control

The functions of command are eternal.

Martin van Creveld¹

INTRODUCTION

Before addressing the specific arrangements for the command and control of battlefield helicopters, it is first necessary to consider some general principles of command and control. However, military command and control is a complex process and subject to numerous and diverse perceptions. Much has been written about command and control and a substantial body of doctrine is available to guide decision-makers. There is also extensive and growing literature on management and organisational theory from the wider fields of social science, much of which has at least some applicability to the military environment.² While the distinct and unique requirements of a military environment limit the scope for embracing models directly from the private sector, there is nonetheless recognition that the military may be able to learn valuable insights from the wider community.³

This chapter addresses some of the fundamental aspects of command and control. First, definitions of some of the terms used to describe the command and control process are discussed, establishing a foundation for the remainder of the study. Next, inter-Service relationships are discussed to establish why the Services may come to different conclusions on command and control issues. Finally, different styles of command are assessed to identify which might be most appropriate for the command and control of battlefield helicopters.

COMMAND AND CONTROL TERMINOLOGY

Command and control is a critical issue in the military environment, where the margin for error is often infinitesimally small, and the consequences of error can be enormous. Successful command and control depends on a common understanding between the various components of the system; thus it is vital to establish agreed definitions of the terms used to describe the command and control process.

¹ Martin van Creveld, *Command in War*, Harvard University Press, London, 1985, p. 9.

² Significant works on command and control include van Creveld, *Command in War*; John Keegan, *The Mask of Command*, Viking Press, New York, 1987; and Frank M. Snyder, *Command and Control: The Literature and Commentaries*, National Defense University, Washington DC, September, 1993. Sources of doctrine on command include British Army Doctrine Publication (ADP) Vol 2, *Command*, 1995 and United States Joint Chiefs of Staff Joint Publication (Joint Pub) 0-2, *Unified Action Armed Forces (UNAAF)*, 24 February 1995.

³ Rt Hon Malcolm Rifkind, 'Defence Management', *The Framework of United Kingdom Defence Policy*, Centre for Defence Studies, University of London, 1995, pp. 138-39.

Fortunately, agreed definitions for most of the terms have been established in joint and allied doctrine, providing a sound basis for command relationships. However, there are some variations, notably between NATO and US doctrine. Additionally, some command and control terms are peculiar to each Service and may not be widely understood in the joint environment. The most fundamental definition concerns what the term command and control means.

Command and Control

The term *command and control*, which is often abbreviated to C2, is a relatively recent expression and has generally been accepted into military parlance only since World War II.¹ Previously, the military functions of command and control were usually referred to simply as *command*. More recently, command and control has evolved further, especially in the US, with the introduction of terms such as C3 (by adding communications), C3I (by adding intelligence), and C4I (adding computers).² The term command and control will be used in this study to describe organisational structures and processes associated with directing military forces.

In current military usage, *command* and *control* each have specific meanings. NATO defines *command* as 'the authority vested in an individual for the direction, coordination and control of military forces'.³ *Command* is thus a broad authority and includes tasks such as formulating concepts, determining desired end-states, assigning missions, allocating resources for those missions, assessing risk, and making decisions. Commanders lead, guide, and motivate their subordinates to accomplish missions and to win decisively.⁴ The need to lead troops in combat, perhaps to risk their lives, is unique to the military environment and is one of the distinguishing characteristics of military command and control. Put simply, *command* is the commander's business.⁵

Control has two meanings. In one sense, it is often regarded as the process through which command operates, such as staff, facilities and communications, and concerns regulating forces and functions to execute the commander's intent.⁶ In this sense, *control* can be regarded as the staff's business.⁷ The other application of *control* relates to specific levels of authority exercised by a commander over forces not normally under his command. These levels are sometimes referred to as states of command.

¹ van Creveld, *Command in War*, p. 1.

² Dr David S. Alberts and Dr Richard E. Hayes, *Command Arrangements for Peace Operations*, National Defense University Press, Washington DC, May 1995.

³ NATO Allied Joint Publication (AJP)1-(A), *Allied Joint Operations Doctrine*.

⁴ Alberts and Hayes, *Command Arrangements for Peace Operations*, 'Key Concepts'.

⁵ *Ibid.*

⁶ ADP Vol. 2, Para 1.6.

⁷ Lieutenant General Wilson A. Schoffner, US Army, 'Future Battlefield Dynamics and Complexities Require Timely Relevant Information', *Phalanx: The Bulletin Of Military Operations Research*, March 1993, pp. 1, 31-35, quoted in Alberts and Hayes, *Command Arrangements for Peace Operations*, 'Key Concepts'.

States of Command

States of command establish the authority that a commander has over forces assigned to him. Typical levels of authority, such as those currently recognised by NATO, include the following:¹

- **Full Command.** Full Command covers every aspect of military operations and administration and exists only within national Services. Thus, by definition, Full Command over personnel cannot be delegated to a commander from another Service, and in the UK Armed Forces is usually retained by a Commander-in-Chief. Full command equates to ownership.
- **Operational Command.** Operational Command is the authority granted to a commander to assign missions or tasks to subordinate commanders, to deploy units, and to assign forces, but does not, of itself, include responsibility for administration or logistics. Operational Command has been likened to long-term leasing.²
- **Operational Control.** Operational Control is the authority delegated to a commander to direct assigned forces to accomplish specific missions or tasks within agreed limitations, usually related to function, time or location. Importantly, Operational Control does not include the authority to assign separate employment to components of the formation or units concerned, nor does it include responsibility for administration or logistics.
- **Tactical Command.** Tactical Command is the authority delegated to a commander to assign tasks to forces under his command for the accomplishment of missions assigned by higher authority. It does not include authority to alter the structure of the force by assigning separate employment to various components of the force and may not be further delegated to another commander.
- **Tactical Control.** Tactical Control is limited to authority for detailed and usually local direction and control of movements and manoeuvres necessary to accomplish missions or tasks assigned. Tactical Control can be considered as short-term hire.

These levels of authority provide a framework for delegating the appropriate degree of command and control to operational and tactical commanders without unnecessarily burdening them with all the complexities of supporting the assigned forces. In some respects, these arrangements can be considered as the military equivalent of *out-sourcing*, now practised widely in the commercial sphere. Of particular significance in these definitions is the difference between Operational Command and Operational Control. Operational Command allows a commander to assign separate employment of components of assigned units, and thus he has freedom to ‘task-organise’ sub-elements, whereas this is not authorised under Operational

¹ NATO AAP-6, *Glossary of Terms and Definition*, and UK Joint Service Publication (JSP) 110, *Glossary*. Similar definitions are also used by the Australian Defence Force.

² Alberts and Hayes, *Command Arrangements for Peace Operations*.

Control. Thus, Operational Control places significant limits on a commander and inhibits his flexibility.

While these arrangements may have served NATO purposes well during the Cold War, they seem inadequate to meet fully the demands of the more complex environment now faced by military forces. In particular, a joint commander might need to take on logistic and administrative responsibilities beyond those normally associated with Operational Command, yet it will often be inappropriate and unnecessary to assign forces under Full Command. In practice, detailed and precise relationships may need to be established for each new operational circumstance.

It is interesting to note that command states in US joint doctrine deviate significantly from those set out in the NATO doctrine.¹ States of command in US joint doctrine include Combatant Command (COCOM), Operational Control (OPCON), Tactical Control (TACON) and Administrative Control (ADCON). COCOM is similar to Operational Command in NATO doctrine, but also includes broader responsibilities such as logistics and training. OPCON differs from NATO Operational Control in that it does not preclude the commander from reorganising subordinate forces. TACON on the other hand is similar to the NATO definition. ADCON relates to matters such as personnel administration, unit logistics, control of resources and individual training, and is usually conducted along Service lines. Unless the differences between US and NATO terminology were clearly spelt out and widely understood, they could lead to serious misunderstandings during coalition operations.

Supporting Relationships

In addition to these formal command states, US joint doctrine also defines several categories of support that can be established between commanders. Supporting relationships are used when an organisation aids, protects, complements or sustains another force and provides an extremely flexible mechanism for commanders to employ forces not normally under their command. For any specified joint operation, the senior commander establishes a *supported* (or *lead*) and *supporting* commander, and specifies the degree of authority under which the forces are provided.² Normally, the supported command would be given the authority to exercise general direction of the overall effort, including designating targets or objectives and setting priorities for his assigned mission. The supporting commander would then normally be free to determine the forces, tactics and methods required to provide the necessary level of support. Thus, the supported commander determines **what** effect he wishes the supported commander to achieve, without telling him **how** to achieve it.

Categories of support include General, Mutual, Direct, and Close, implying increasingly higher levels of cooperation and coordination between supporting and supported units.³ As the name implies, Mutual Support is support that units provide to each other by virtue of their task, location and capabilities. General Support is defined as support provided to a force as a whole rather than to specific units. Direct Support requires a supporting unit to respond directly to requests from the supported unit, while Close Support requires detailed integration or coordination between supporting and supported forces. Units providing Close or Direct Support will normally establish liaison staff with the supported unit.

¹ Joint Pub 0-2, pp. xi-xii.

² United States doctrine refers to the *supported* commander, while the term *lead* commander is used in British Army Doctrine. Joint Pub 0-2, p. III-10 and ADP Vol. 1, *Operations*, p. 4-10.

³ Joint Pub 0-2, p. III-10.

Army Terminology

Command relationships can be related to traditional army command terminology, which, although largely superseded by the joint terminology outlined above, is still sometimes used. Traditional army terms include Under Command, In Support, and Technical Control.¹ Under Command equates roughly to Full or Operational Command and usually includes full responsibility for administration and support, but may be qualified to place a unit under command for a particular purpose (eg. 'Under Command for movement'). The term In Support is a control term and is applied when assisting another unit or formation, while remaining under parent command. Consequently, the supported unit does not carry any responsibility or authority for administration or movement of the supporting unit. Technical Control reflects functional areas of interest and enables an authority to exercise specialised professional guidance in technical matters on behalf of the operational commander. Technical Control has particular relevance to helicopters because of the technology involved in rotary-winged aircraft.

INTER-SERVICE RELATIONSHIPS

There is considerable desire on the part of the Services to work together to improve the operational effectiveness of the armed forces. However, as the study of the evolution of battlefield helicopters will show, there are often deep tensions between the Services, leading to damaging inter-Service disputes. While these rivalries could be dismissed as petty parochialism, it is important to acknowledge that two Services can have differing opinions on a topic and both be right. The point is illustrated in the following anecdote concerning a USAF forward air controller (FAC) in Korea in the 1970s. Although the tale has a setting in the US military, it suffers little from ethnocentrism, and would probably strike a chord with many in armed forces of a number of countries, who would no doubt recognise the idiosyncrasies without difficulty.

Army officers never drive their own administrative vehicles; to do so would be like using bad language in front of one's mother. It just isn't done. Fighter pilots, on the other hand, seldom relinquish the controls to anyone. A fighter pilot FAC (a USAF captain) drove up to a cantonment gate and was greeted by a brigade commander (a US Army colonel) checking seat belt use. He didn't think he had a problem. After all, his belt was securely fastened. Imagine his surprise when the colonel snarled, 'Captain, I can't believe how much the Air Force pays its jeep drivers!' the FAC thought for a minute, and replied, 'Colonel, it isn't half as much as the Army pays its gate guards!'²

From their own perspective, they were both right, and the same can often be said about the different approaches adopted by the Services to command and control. Each Service tends to consider the requirements of command and control from its own perspective, which, because of basic differences in the environments in which they

¹ Australian Army Manual of Land Warfare 1.1.2, paras 4.14 - 4.17.

² Colonel Daniel P. Leaf, USAF, *Unity of Command and Interdiction*, College of Aerospace Doctrine, Research, and Education, Airpower Research Institute, Maxwell Air Force Base, Alabama, July 1994, p. 3.

work, can result in quite different approaches. In many cases, these differences are unimportant because the overlap between the Services is quite limited. However, one area of significant overlap is in the interface between air and land operations, which is the heartland of battlefield helicopter operations. An important difference between the Services affecting the command and control of helicopters is over the appropriate degree of centralised command and control for air operations.

In essence, Army doctrine stresses the merits of decentralised command, while Air Force doctrine stresses the merits of centralised control, albeit acknowledging the benefits of decentralised execution.¹ Another consideration is that differences between the Services' doctrine may be more a question of emphasis rather than substance. For example, what one Service describes as a decentralised system might be perceived by another Service as a centralised system and the analogy of the half-filled wineglass seems to apply here.² While helicopters operate in the air environment, they also interact closely with the ground; indeed, one tactic for improving their survivability in the combat environment is to operate as close to the ground as possible.³ Consequently, both Army and Air Force perspectives may be pertinent to helicopter operations. What is needed is a framework for assessing the applicability of each doctrine and style of command.

STYLES OF COMMAND

Allard suggests that differences between Army and Air Force in command and control philosophies are a function of the different environments of land and air warfare.⁴ In land warfare, the commander must command a large number of subordinate elements in an unpredictable environment, where communications are often difficult. In the air environment, the air commanders has relatively fewer subordinates and a much greater chance of observing his environment more fully. For army commanders, decentralisation is a means of dealing with the uncertainties inherent in their environment by distributing decision making; whereas, air commanders seek to control uncertainty through centralising information. This deduction is consistent with van Creveld's observation that 'the history of command in war consists essentially of an endless quest for certainty'.⁵ The problem with decentralised systems is that they are inherently less efficient than centralised systems and risk losing focus. On the other hand, a limitation of highly centralised systems is that they risk 'information pathology' induced by either too much or too little information.⁶ Anyone that has tried to glean information from the Internet will probably be able to relate to the idea of 'information pathology', whereby one is swamped by masses of data and unable to

¹ ADP Vol. 2, para. 2-11; and AP 3000, p. 31.

² While one person might describe a half-filled wineglass as half-full, someone else might describe it as half-empty. Similarly, a half-centralised system could be described as decentralised by one person and centralised by another.

³ By flying in the nap of the earth, using minor terrain and cultural features for cover, helicopters can reduce their exposure to hostile weapon systems.

⁴ Kenneth C. Allard, *Command, Control and the Common Defense*, Yale University Press, New Haven, Conn., 1990, Figure 6-3.

⁵ van Creveld, *Command in War*, p. 264.

⁶ The term information pathology is used by van Creveld to describe the situation in the Vietnam War in which commanders sought ever-increasing amounts of information, but as their capacity to distribute information increased, their capacity to deal with it reduced. *Ibid.*, pp. 247-249.

isolate the information that is of vital importance from the plethora of irrelevant material.

Styles of command can be categorised according to the way in which the commander aims to deal with uncertainty. Czerwinski identifies three styles adopted through the ages: command-by-direction, command-by-plan, and command-by-influence.¹ Command-by-direction reflects the highly centralised style of command widely practised in the ‘heroic’ period of leadership before the Napoleonic Wars. Here, commanders attempt to deal with uncertainty by personally controlling virtually all aspects of battle. However, as warfare became more complex, and lacking the means to gather and distribute information, commanders began to devise methods to command-by-plan. This style of command is epitomised by Frederick the Great’s attempts to plan in advance every move of a battle, and to some extent has become the norm for many modern military forces.² Command-by-plan relies on disciplined troops executing orders devised by commanders attempting to foresee most eventualities on the battlefield and sacrifices flexibility in favour of focused efforts. This style of command has resonance with the highly centralised Air Tasking Order (ATO) process exercised in the 1991 Gulf War, with its emphasis on centralised control, three-day planning cycles and coordinated attacks on the enemy’s centre’s of gravity.³ However, as van Creveld points out, taken too far, this style of command risks being self-defeating in a futile attempt to bring order to the inherently chaotic field of conflict.⁴ Command-by-influence is characterised by the style of command developed by the Germans in Word War II known as *auftragstaktik*, in which the commander establishes what objectives he wishes to be achieved, leaving the detailed execution to subordinates. This style of command places great reliance on the initiative of subordinates, based on their awareness of the local situation and the commander’s intent, and is reflected in the philosophy of *Mission Command* adopted by the British Army.⁵ The development of these various styles of command and their relationship to centralisation can be seen at Figure 1.1.

It is not yet clear which style of command will be most appropriate for the so-called ‘information age warfare’ of the future.⁶ In theory, the rapid growth of information technology should increase the amount of information available and reduce uncertainty. This would improve the ability to command-by-plan, or perhaps even command-by-direction. This appears to be the current direction adopted by the

¹ Thomas J. Czerwinski, ‘Command and Control at the Crossroads’, *Parameters*, US Army War College Quarterly, Autumn 1996, pp. 121-132. A more detailed perspective of command styles identifies three approaches to command and control, each with at least two important subtypes. The key distinction is the level of centralisation required, ranging from the heavily distributed ‘control-free’ to the inherently centralised ‘cyclic’ approaches. Alberts and Hayes, *Command Arrangements for Peace Operations*, Figure 14.

² van Creveld, *Command in War*, p. 53.

³ For a description of the Air Tasking Order process, see Despina Tramoundanis, *Australian Air Power in Joint Operations*, Air Power Studies Centre, Canberra, 1995, esp. pp. 80-94.

⁴ van Creveld, *Command in War*, p. 269.

⁵ Mission Command is a style of command in which the commander makes known his intentions to a subordinate (**what** effect he wishes to achieve and **why** he wishes to achieve it), but relies on the subordinate to carry out the mission within his broad guidance (ie. **how** best to achieve the mission). ADP, Vol. 2, para 2.10. The US Army, US Marine Corps and Australian Army employ a similar philosophy, known as Directive Control.

⁶ See Alvin and Heidi Toffler, *War and Anti-War: Survival at the Dawn of the 21st Century*, Little Brown and Company, New York, 1993.

US Army in its attempt to ‘digitize’ the battlefield.¹ However, van Creveld marshals a strong argument to suggest that technology and war actually run in opposition, and that attempts to remove the fog and friction of war through technology are unlikely to succeed.² Emerging theories of post-Newtonian physics, supported by chaos theories and non-linear dynamics, seem to support this view.³

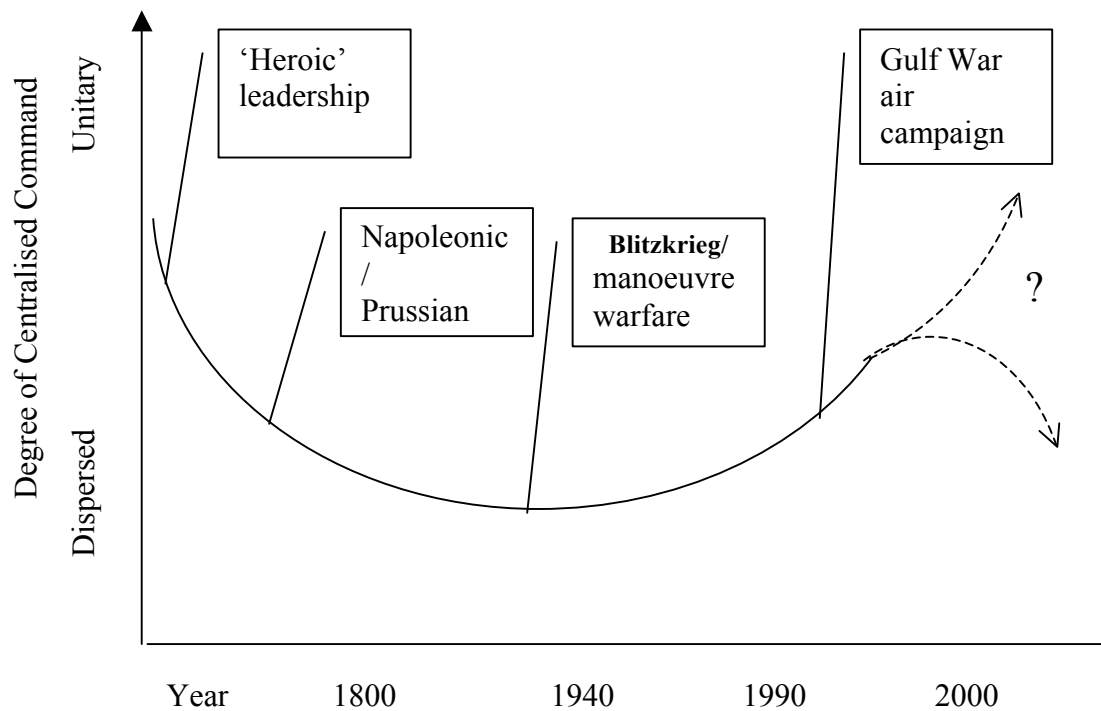


Figure 1.1: Development of Command And Control Styles⁴

This leaves the questions as to where helicopters should fit into this framework, and where they belong on the centralised/decentralised continuum? Considering command and control systems from the perspective of safety engineering, as suggested by Perrow, may be instructive.⁵ In safety engineering, the properties of the system are classified according to certain characteristics so that risks can be assessed and managed. The component parts of a system are classified according to whether they are tightly or loosely coupled, and the analogy holds good for command and control systems. Tightly coupled systems are strongly dependent upon one another and there is strong correlation between the component parts of the

¹ General William W. Hartzog, ‘Creating Army XXI’, *Army 1996-97 Green Book*, Vol. 46, No. 10, October 1996, pp. 55-58.

² Martin van Creveld, *Technology and War*, The Free Press, New York, 1989, esp. pp. 311-320.

³ See Czerwinski, ‘Command and Control at the Crossroads’.

⁴ Based on Alberts and Hayes, *Command and Control in Peace Operations*, Figure 14.

⁵ Charles Perrow, *Normal Accidents: Living with High Risk Technologies*, Basic Books, New York, 1984, p. 78.

system; consequently, disturbances tend to propagate throughout the system. These attributes are reversed in loosely coupled systems.¹ The degree of complexity in the interaction between systems can be characterised as linear or complex, with linear interactions representing those in which most arisings are predictable and routine, while in complex interactions, sequences are unfamiliar and outcomes unpredictable.² In safety engineering terms, the systems at most risk of failure are tightly coupled complex systems, while the safest systems are those in the loose linear regime. These relationships are shown diagrammatically at Figure 1.2.

		COUPLING	
		Tight	Loose
INTERACTION OF PARTS	Linear	Command-by-Plan Centralised control Air Tasking Order	Either centralised or decentralised Some combat support functions
	Complex	Command-by-Direction Neither centralised nor decentralised	Command-by-Influence Decentralised Mission Command

Figure 1.2: Interaction of Command and Control Systems³

The Air Tasking Order process exemplified in the 1991 Gulf War can be considered a tight-linear system, in which actions by separate components (ie. individual aircraft) are designed to have closely related outputs (eg. focused effort), and those outputs are expected to be predictable (ie. achieve their operational/strategic effect). Where sequences are less predictable, tight coupling can lead to failure and in these circumstances, a more decentralised style of command (eg. Mission Command) is more appropriate.

Identifying the most appropriate style of command for battlefield helicopter operations on this matrix is the central theme of this study and will be pursued in the following Chapters.

¹ Major Steven M. Rinaldi, USAF, *Beyond the Industrial Web: Economic Synergies and Targeting Methodologies*, School of Advanced Airpower Studies, Maxwell Air Force Base, Alabama, April 1995, pp. 8-9.

² Perrow, *Normal Accidents*, p. 331.

³ Source: Czerwinski, 'Command and Control at the Crossroads, Figure 1.

CHAPTER TWO

HELICOPTERS AND AIR POWER DOCTRINE

INTRODUCTION

Principles for the employment of military force are set out in doctrine, which should, therefore, be an important influence in determining command and control arrangements. The complication when considering battlefield helicopters is that several sources of doctrine are available, produced both jointly and by the individual Services. This reflects the nature of the helicopter operations, which take place at the boundary between different Service domains. Helicopters are, by definition, an element of air power, but because their operations are intrinsically linked to surface operations, land and maritime doctrine also have a major influence on their employment. The key question, then, is to what extent should command and control of helicopters be determined by air power or surface doctrine?

This chapter considers the nexus between air power doctrine and battlefield helicopters. First, the nature of doctrine is considered by examining its definitions and identifying different types of doctrine. Definitions of air power are then explored, before evaluating the applicability of established principles for command and control of air power. Next, the various air power roles are highlighted to identify how helicopters fit within this paradigm. This process is intended to illustrate the relevance, or otherwise, of air power doctrine to the command and control of battlefield helicopters. Current RAF air power doctrine is used as the basis of this critique, although reference is also made to RAAF and USAF doctrine.

DOCTRINE

What is Doctrine?

Perhaps one of the simplest definitions of doctrine is ‘that which is taught’.¹ However, while this definition is simple, it provides little clue as to why it is taught. More comprehensively, NATO defines doctrine as:

Fundamental principles by which military forces guide their actions in support of objectives. It is authoritative, but requires judgement in application.²

Thus, doctrine provides a framework for understanding how to best employ military force based on accepted theory. Clearly, it is not meant to be used as a set of rules to be followed blindly, but as a guide, requiring professional judgment in its application. It should reflect enduring principles for the employment of military force, yet it

¹ Royal Air Force Air Publication (AP) 3000, *Air Power Doctrine*, 2nd Edition, Her Majesty’s Stationery Office, London, 1993, p. 7.

² NATO publication AAP-6, *Glossary*.

should not be immutable. To remain valid, doctrine needs to evolve, adapting to the changes of technology, threat, and experience; otherwise, there is a risk it could become stagnant and irrelevant to the real world. Given the furious pace of developments in military affairs in recent years, this is a serious challenge for any doctrine.

Types of Doctrine

Doctrine can be categorised as strategic (basic), operational or tactical. Strategic level doctrine establishes enduring (but not immutable) principles for the employment of military force, while operational level doctrine provides guidance in the planning and execution of operations and campaigns. At the tactical level, doctrine sets out detailed operating procedures and techniques.¹ This chapter is concerned mainly with operational doctrine, although basic air power doctrine is also considered; tactical doctrine is largely outside the scope of this study.

In the UK, strategic level doctrine is set out in British Defence Doctrine, which describes the linkages between national policy and military operations.² Additionally, the RN, British Army and RAF have each published doctrine manuals dealing respectively with maritime, land and air warfare.³ These publications are related works, but they consider the application of military force from different viewpoints. The British Army and the RAF have also produced operational level doctrine which set out each of the Services' approach to the employment of military force in their own environment.⁴

It is interesting to note that, at the operational level at least, single Service doctrine appears to be much more developed than joint doctrine, even though the Services agree that major operations in the future will be conducted as joint campaigns. Perhaps this indicates that, despite the rhetoric about 'jointness', the Service's are more willing to invest intellectual capacity in their own environment than in the joint arena. Moreover, because of the way each Service views its environment, there is no clear and universally agreed delineation between each of the Service's doctrine; consequently, there is considerable overlap. This is especially true of helicopter operations, which although they fall within the definition of air power, are also considered intrinsic to both the land and maritime environments. So how well does air power doctrine relate to helicopter operations? To answer this, it is first necessary to consider what is meant by air power.

AIR POWER DOCTRINE

What is Air Power?

One of the challenges for air power doctrine is finding a definition as to what constitutes air power. At one extreme, one could consider all activities that exploit the third dimension above the surface of the earth to be air power. However, with such a

¹ British Army Doctrine Publication (ADP), Vol. 1, *Operations*, June 1994, p. vi.

² Joint Warfare Publication (JWP) 0-01, *British Defence Doctrine*, p. 1.4.

³ BR1806, *The Fundamentals of British Maritime Doctrine*, Her Majesty's Stationery Office, London, 1995; Army Code (AC) 71451, *The British Military Doctrine*, 2nd Edition, 1996; and AP3000.

⁴ ADP Vol. 1, *Operations*, and RAF *Air Operations Manual*, Vol. 1, 1st Edition, RAF Air Warfare Centre, Bently Priory, September 1996.

definition, there would be little in the military sphere that would be excluded from the definition of air power, since artillery, small arms and even stone throwing exploit the air for transit. A more limited definition might consider only systems operated by air forces, but this would somewhat arbitrarily include, for example, helicopters operated by air forces, but not those operated by armies and navies, even though they may be fulfilling the same roles. To be of analytical value, air power doctrine needs to describe elements that are sufficiently similar that they have common attributes, and at the same time, they should be sufficiently distinct from other elements of military power that they are worth considering separately. This enables a set of guiding principles for the employment of air power to be derived from their shared characteristics. Without such a focus, air power doctrine risks becoming intangible, or worse, banal, in attempting to encompass too wide a sphere.

The definitions of air power currently accepted by the RAF, USAF and RAAF are as follows:

RAF: air power is the ability to use platforms operating in or passing through the air for military purposes.¹

USAF: aerospace power grows out of the ability to use a platform operating in or passing through the aerospace medium for military purposes.²

RAAF: air power represents the ability to project military force in the third dimension - which includes space - by or from a platform above the surface of the earth.³

The common feature of these definitions is that air power is defined by the use of platform; thus these definitions encompass not just fixed-winged aircraft but also helicopters, uninhabited aerial vehicles, balloons, guided missiles, and satellites. Clearly, air power doctrine is not intended to be limited to systems operated by air forces, but also takes in platforms operated by naval and army air arms. While there is a neat doctrinal purity in these definitions, can the principles of air power remain applicable and useful across such a broad spectrum of capabilities? In particular, what is the nexus between helicopters and air power doctrine?

Helicopters and Air Power

Most air power doctrine appears to be derived from analysing the characteristics of the predominant air power platforms, ie., manned fighter and bomber aircraft. Characteristics of air power are normally described in terms of positive and negative attributes. Primary strengths include speed (swiftness of application), reach (or range) and flexibility (or, perhaps more appropriately, versatility).⁴ Limitations include cost, fragility, impermanence, and base dependence.⁵ Other forms of combat power share

¹ AP 3000, p. 13.

² United States Air Force Manual (AFM) 1-1, Vol. 1, *Basic Aerospace Doctrine of the United States Air Force*, Department of the Air Force, Washington DC, March 1992, p. 5.

³ DI(AF) AAP 1000, *The Air Power Manual*, 2nd Edition, Canberra, 1994, p. 31.

⁴ For a variation on this theme, see Air Vice-Marshal Tony Mason, 'Characteristics of Aerospace Power', in *Air Power and Space – Future Perspectives*, Proceedings of the Air Power Conference, Queen Elizabeth Hall, London, 12-13 September 1996.

⁵ AP 3000, pp. 13-16.

many of the attributes of air power, and it is only their synergistic combination that makes air power distinct. So is it reasonable to consider helicopters as air power platforms?

Most of the terms used to describe the characteristics of air power are relative and are not equally applicable to all forms of air power. For example, compared to modern fixed-wing aircraft, helicopters enjoy only a small speed advantage over surface vehicles. Similarly, helicopters do not generally enjoy the range advantages of fixed-wing aircraft. These factors, in combination at least, are important considerations in the formulation of air power doctrine; consequently, since they do not apply equally to helicopters, the doctrine may not be as applicable. In a similar vein, some of the limitations normally ascribed to air power, such as base dependence, do not affect helicopters in the same way as they do most fixed-wing aircraft. Despite these shortcomings, however, helicopters do share some important characteristics with other forms of air power. As with fixed-wing aircraft, helicopters are unimpeded by surface obstacles and boundaries, enabling them to concentrate force in time and space from unpredictable directions of approach. Exploiting the third dimension also enables helicopters to enjoy the benefit of the perspective gained from height, which can have important military advantages in many circumstances. The much-vaunted attribute of flexibility of air power seems to be especially applicable to helicopters.

Helicopters also share some of the limitations of fixed-wing aircraft, including fragility, cost and limitations imposed by weather. To some extent, some of these limitations can be mitigated by advances in technology; indeed, in many respects helicopters outperform fixed wing aircraft in these areas. It is also important to take a broad view of these limitations. Fragility is not the same as vulnerability; while helicopters may be fragile, if employed correctly, they may be considerably less vulnerable than surface vehicles, as exemplified by their extensive use in Northern Ireland. Similarly, while extreme weather conditions can inhibit helicopter operations, they also impede surface operations. During the deployment of US forces to Bosnia in December 1995, armoured forces were delayed for weeks trying to cross the swollen River Sava, while helicopter forces leap-frogged ahead of the main deployment, despite severe snowstorms.¹

It would appear, then, that despite some differences, helicopters share sufficient characteristics with other forms of air power for their employment to be considered within the milieu of air power doctrine. What is less clear is how helicopter operations fit into the analytical framework of current RAF air power doctrine, which is built largely around air campaigns.

Air Campaigns

RAF air power doctrine recognises three complementary air campaigns: counter-air, anti-surface forces and strategic air offensive that together form an air strategy.² Air campaigns are defined as ‘a coordinated series of air operations designed to achieve specific air strategic objectives’.³ However, these campaigns describe only the combat applications of air power, which represent just part of the claimed spectrum of air operations. Other air operations fall within the ambit of combat support air operations,

¹ For an account of the deployment of US helicopters to Bosnia as part of the NATO Implementation Force (IFOR) see Tim Ripley, ‘Apache over Bosnia’, *World Air Power Journal*, Vol. 29, Summer 1997, p. 98.

² AP 3000, p. 27.

³ *Ibid.*, p. 27.

which are defined as ‘non-combat air operations designed to enhance the combat capabilities of air, surface and sub-surface forces’.¹ Air operations are conducted within an air power operational hierarchy of roles, tasks, missions and sorties.

There are a number of difficulties with this doctrine when viewed from the perspective of helicopter operations. For example, an air strategy is defined as ‘the overall employment plan for *air forces* in a war’ (emphasis added), which implies that air strategy does not involve the air assets of surface forces.² Moreover, use of the term *air campaign* can create the impression that air power is viewed in isolation from other combat forces, which in turn adds to the confusion over what constitutes air power. Taking a bottom-up approach, it is difficult to see why an attack helicopter sortie against an enemy armoured advance, constituted as part of an all-arms response, should be considered part of an air campaign rather than part of a land or joint campaign. Yet, a humanitarian relief operation conducted by air transport, such as the Berlin airlift or the relief of Sarajevo, seems to fall outside the definition of an air campaign. Finally, it is not clear to what extent combat-support air operations form part of the air strategy, so the extent to which air power doctrine should apply to these operations is open to question. On the face of it, these concerns may seem semantic, but the difficult terminology can lead to misunderstandings about the nature of air power.

Given the language used to describe air power doctrine, it would not be surprising if surface commanders assumed that air power was synonymous with the air campaigns, and that, consequently, their organic air elements do not need to be considered part of the air power spectrum. Moreover, the focus on an air strategy in current air power doctrine also implies that other air power roles are of secondary importance to an air force, and will therefore be afforded a lower priority. Examples from past operations that might support this perception will be highlighted in later chapters. Failure to recognise the crucial importance of combat-support air operations to the conduct of surface operations undermines the credibility of air power doctrine, and adds to the momentum for surface commanders to gain control of the air power resources needed to prosecute their operations.

Interestingly, emerging RAAF air power doctrine looks set to abandon the use of the term ‘campaign’ and instead focus on more tangible roles of air power such as theatre control, precision strike, precision engagement, force application, force multiplication and force support. These roles appear to align closely with the roles of aerospace control, force application, force enhancement and force support identified in the basic aerospace doctrine of the USAF.³ These roles identify core competencies for air power and seem to provide a more useful construct for considering air power in the joint environment.

Notwithstanding the limitations of current air power doctrine in relation to helicopter operations, however, it may still have some relevance to their employment. It is therefore useful to explore how helicopters might be employed within the framework of air power roles.

¹ *Ibid.*, p. 28.

² *Ibid.*, p. 26.

³ AFM 1-1, p. 7.

AIR POWER ROLES FOR HELICOPTERS

As noted earlier, RAF air power doctrine identifies a number of specific, inter-related roles for the employment of air power. The ability of helicopters to take off and land vertically, and to sustain hovering flight brings unique capabilities that make them particularly suitable for employment in a number of both combat and combat-support air operations. In combat air operations, for example, helicopters may approach targets covertly by flying in the nap of the earth, which may not be possible using fixed-wing aircraft. Additionally, attack helicopters can employ long-range laser guided weapons to provide highly discriminate attacks against pinpoint targets, and record the engagement using high-fidelity imagery, providing an extremely useful capability not generally available from fixed-wing aircraft. In RAF air power doctrine, combat air operations are considered within the framework of the three air campaigns: counter-air, anti-surface-force and strategic air offensive.

Counter-Air Campaign

The objective of the counter-air campaign is to gain and maintain the required degree of control of the air by denying the enemy the ability to exploit the air environment, while facilitating friendly use.¹ Hence, the counter-air campaign contributes to the success of other operations, and will often be a necessary precursor, since, in the absence of control of the air, many other operations become untenable. This is certainly true for helicopter operations, which can be extremely vulnerable to enemy air attack. That said, the ability of high performance fighters to shoot down helicopters in transit should not be taken for granted, especially if the helicopters are equipped with defensive aids such as chaff and flares; moreover, fitting air-to-air missiles to helicopters alters the balance dramatically in favour of the helicopter. The counter-air campaign, which comprises offensive and defensive air operations, is considered the primary campaign in RAF doctrine, although this is really only the case when the enemy possesses a significant air capability.

Helicopters can play a role in the counter-air campaign and, although their contribution is likely to be minor compared to that of fixed-wing aircraft, it can, nevertheless, be crucial on occasions. In offensive counter-air operations, attack helicopters can be used to suppress enemy air defences, as they were with notable success during the opening phase of the 1991 Gulf War. Such operations would normally demand close integration with other air attack and support packages, and could involve the use of surface forces such as artillery. Attack helicopters can also be used to escort transport helicopters, to defend them against enemy attack helicopters and, to a limited extent, enemy fixed-wing aircraft. Transport helicopters can also be used in the offensive counter-air role by inserting ground troops to conduct raids on targets such as air defence facilities or airfields. The raid on Pebble Island by British Special Forces during the 1982 Falkland Islands conflict, which resulted in the destruction of a number of Argentinian aircraft, was an example of such an operation.² In most circumstances, though, it is unlikely that such operations will be the

¹ The degrees of air control are defined as a *favourable air situation*, in which enemy air effort is insufficient to prejudice friendly success; *air superiority*, which allows the conduct of friendly operations, but may be limited in time or space; and *air supremacy*, in which an enemy is incapable of interfering with friendly air operations. AP 3000, p. 39.

² *Ibid.*, p. 47.

predominant role for either attack or transport helicopters. The use of helicopters in defensive counter-air operations is likely to be even more limited, although attack helicopters will be capable of providing a degree of local air defence, and transport helicopters can be used to relocate ground-based air defence systems.

Anti-Surface-Force Campaign

In Land/Air operations, the anti-surface-force campaign comprises air interdiction, offensive air support, and armed reconnaissance. Attack helicopters are capable of fulfilling all of these roles either independently or in conjunction with other air or surface elements. Traditionally, air interdiction missions have been distinguished from offensive air support missions by the level of interaction with army-delivered weapon systems: air interdiction is conducted against land targets beyond the range of army weapon systems; while offensive air support is conducted against land targets in a position to affect friendly forces directly.¹ In a period when the longest-range army systems had a reach in the order of 20 kilometres, such a distinction made sense.² However, the introduction of long-range army weapons systems, such as attack helicopters and surface-to-surface missiles, as well as the concept of a non-linear battlefield, makes such distinctions harder to discern. Moreover, since attack helicopters can be considered army weapon systems, and are capable of attacking targets 200 kilometres from friendly ground forces, treating all air operations within this range as offensive air support would reduce significantly the flexibility of the air commander to engage targets without detailed coordination with land forces. In effect, a large proportion of air power would be subordinated to the ground commanders, with the risk of a losing the theatre-wide perspective that centralised control of air power brings. It would appear that doctrine has not kept pace with technological developments.

Another area of doctrinal difficulty, especially in the US, is the definition of close air support. Close air support, which in the US military is a mission assigned to the USAF, is defined as 'air action against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces'.³ Although the US Army uses attack helicopters for 'air action against hostile targets which are in close proximity to friendly forces', this action is described as 'aerial fires' and not close air support.⁴ In Australian Army doctrine, Army helicopters are regarded as providing aerial fire support, which is distinguished from close air support by virtue of the fact that the platform is an integral part of the land commander's combat power.⁵ However, it seems likely that this doctrinal 'hair splitting' is driven more by the need to comply with the roles and missions delineation rather than to reflect reality. In reality, fire support from helicopters matches the definition of close air support.

¹ Offensive Air Support (OAS) is further categorised into Battlefield Air Interdiction (BAI) and Close Air Support (CAS). While both BAI and CAS require joint planning and coordination, close air support is conducted in close proximity to friendly forces and requires detailed and continuous coordination with ground troops to prevent fratricide. AP 3000, pp. 62-63.

² Conventional artillery, such as 155mm projectiles, has a range of about 18 kilometres. Multi-Launch Rocket Systems (MLRS) can reach 30 kilometres, while the US Army's latest missile, Army Tactical Missile System (ATACMS) can reach nearly 150 kilometres.

³ AP 3000, p. 63.

⁴ FM 100-5, *Doctrinal Principles for Army Aviation in Combat Operations*, 28 February 1989.

⁵ *Manual of Land Warfare*, 1.2.9.

At times, close air support may be a critical mission for air power, but its operational effect will often be less significant than for deeper operations, and will often be an inefficient application of air power.¹ It can also be expensive in terms of attrition of friendly air assets, especially if the enemy is equipped with a layered air defence system.² However, by exploiting the nap of the earth, employing their defensive aids and weapons, and integrating with suppressive fire from other land based systems, attack helicopters will often have greater survivability in the close air support mission than fixed-wing aircraft. Additionally, the ability of attack helicopters to collocate with forward ground units enables their crews to attain a far more detailed understanding of the close battle, reducing the need for coordination and improving integration. Thus, attack helicopters can offer distinct advantages over fixed-wing aircraft in this regime.

On the other hand, the speed, reach and flexibility of fixed-wing aircraft will often make them the preferred weapon system for conducting air interdiction and, to a lesser extent, battlefield air interdiction. Nonetheless, arbitrarily excluding other weapon systems from the interdiction mission can be unnecessarily constraining. Attack helicopters have a significant night and adverse weather capability against most targets and may offer the best means of engaging certain targets. Similarly, other army systems such as Multi-Launch Rocket Systems (MLRS) may be best used in the interdiction role.

Armed reconnaissance, which involves missions to locate and attack targets of opportunity in assigned areas or along assigned ground communication routes, is another role that could be undertaken by attack helicopters.³ Historically, the lack of clear focus for these operations suggests that they may be wasteful in terms of assets and potentially expensive in terms of attrition.⁴ However, the capabilities of attack helicopters to gather visual, electro-optical and electronic information quickly over large areas may make this a suitable task on occasions.

Strategic Air Campaign

The strategic air campaign involves the use of air power to strike directly and with precision at the enemy's strategic centre of gravity, and was the original *raison d'être* for the creation of independent air forces.⁵ An offensive air operation is considered strategic by virtue of the target and the objective rather than by factors such as range from friendly territory, platform type or weaponry.⁶ Preconceptions of strategic air operations may preclude consideration of helicopters for these operations, but they may sometimes be the most suitable platform for such operations. For example, the use of helicopters in pursuit of Panamanian President Noriega could be considered to have been a strategic air operation, although it seems unlikely that the US Army would have regarded it as such.⁷

¹ AP 3000, pp. 63-64.

² *Ibid.*, p. 64.

³ *Ibid.*, p. 64.

⁴ *Ibid.*, p. 64.

⁵ *Ibid.*, p. 70.

⁶ *Ibid.*, p. 72.

⁷ See Chapter Six.

Combat Support Air Operations

In addition to combat air operations, RAF air power doctrine also identifies a number of combat support air operations, some of which could involve helicopters. These include air transport, search and rescue, electronic warfare, and aerospace surveillance and reconnaissance. However, compared with the extensive description of the combat applications of air power (37 pages), combat support air operations are given relatively scant attention (14 pages). This is probably because of the inherent difficulty of deriving basic doctrine for support operations; indeed, it is questionable whether there can be any analytical basis for doctrine of certain types of support operation, other than of a sub-set of the doctrine for the operation it supports. The contention is that there is no such thing as a doctrine for, say, air transport operations, rather that there is doctrine for several types of operation, eg. an airmobile operation, of which air transport forms just one part. Nonetheless, some types of combat-support air operation, such as search and rescue, are sufficiently discrete to be considered operations in their own right, but generally, air power doctrine *per se* can offer only limited guidance on how helicopters might be employed in such operations. Two combat support air operations where helicopters can provide a significant capability are air transport and search and rescue.

Air Transport Operations

Air transport operations are described in terms of strategic (inter-theatre) and tactical (intra-theatre) airlift; in most circumstances, only tactical airlift operations are relevant to helicopters.¹ The five roles of air transport are listed as scheduled services, airborne operations (including parachute assault, helicopter-borne assault and air landing), special air operations (in support of Special Forces, clandestine or psychological operations), air logistic support and aeromedical evacuation operations. During conflicts, most of the tasks for tactical air transport will probably emanate from army requirements, but in non-combat operations tasks could include lifting loads such as humanitarian relief supplies.

Search and Rescue

Helicopters are well suited to the conduct of search and rescue operations, and have been widely used in the role from the earliest days of rotary-winged flight. In the combat environment, such operations are referred to as combat search and rescue, which can be an extremely demanding mission. During the Cold War era, there were doubts as to the efficacy of such operations in the Central European context, but events in the Gulf and Bosnia have highlighted that the recovery of isolated persons from hostile territory could, at times, be of strategic significance. In the past, such operations have usually been based on the need to recover downed aircrew, although in the less dense battlefield of modern conflict, any number of groups or individuals might find themselves in need of rescue. Such operations will often require a ground party to secure the area of the pick-up, in which case it will be necessary to use transport helicopters in the role. In the combat environment, the transport helicopters will require high levels of protection, perhaps involving the use of attack helicopters

¹ Some helicopters (eg. MH53 and MH 47) are capable of air-to-air refuelling and could be used for inter-theatre airlift, as was the case during Operation *Just Cause*, but this is a strictly limited application. See Chapter 6.

or fighter aircraft to provide covering firepower. Consequently, a high level of planning and coordination will be required for such operations.

PRINCIPLES OF COMMAND AND CONTROL OF AIR POWER

The key principles of command and control of air power are centralised command and control, which should be exercised from the highest practical level, and decentralise execution.¹ Centralised command enables air power to be employed in unified action and not wasted in ‘penny-packets’ where its ability to concentrate force could not be fully exploited. While this principle is applicable to helicopters, it needs to be tempered by their relatively short range and low speed compared to modern high performance aircraft. Moreover, it is important that centralised command is not set too high where the tremendous flexibility and responsiveness of helicopters would be wasted. While air power doctrine espouses the principle of centralised command and decentralised execution, it is important to analyse what this means in practice.

The Air Command and Control Process²

Because of the high utility of air power in a variety of roles across a theatre of operations, it is important to ensure that it is properly controlled to extract maximum value from its capabilities. Air power doctrine identifies an assignment process to facilitate the rational distribution of air assets between tasks. The process is described in RAF air power doctrine as follows:³

- **Allotment.** Allotment is the temporary assignment of air forces between subordinate commands. The authority to allot assets is vested in the commander having operational command. The process is used to provide the balance of forces needed to achieve the objectives stipulated by that commander. In effect, allotment assigns assets to a theatre of operations.
- **Apportionment.** Apportionment is the determination and assignment of the total expected effort by percentage and/or priority that should be devoted to the various air operations and/or geographic areas for a given time.
- **Allocation.** Allocation is the translation of the apportionment into total numbers of sorties by aircraft type available for each operation or task.
- **Tasking.** Tasking is the process of translating the allocation into orders and passing those orders to the units involved.

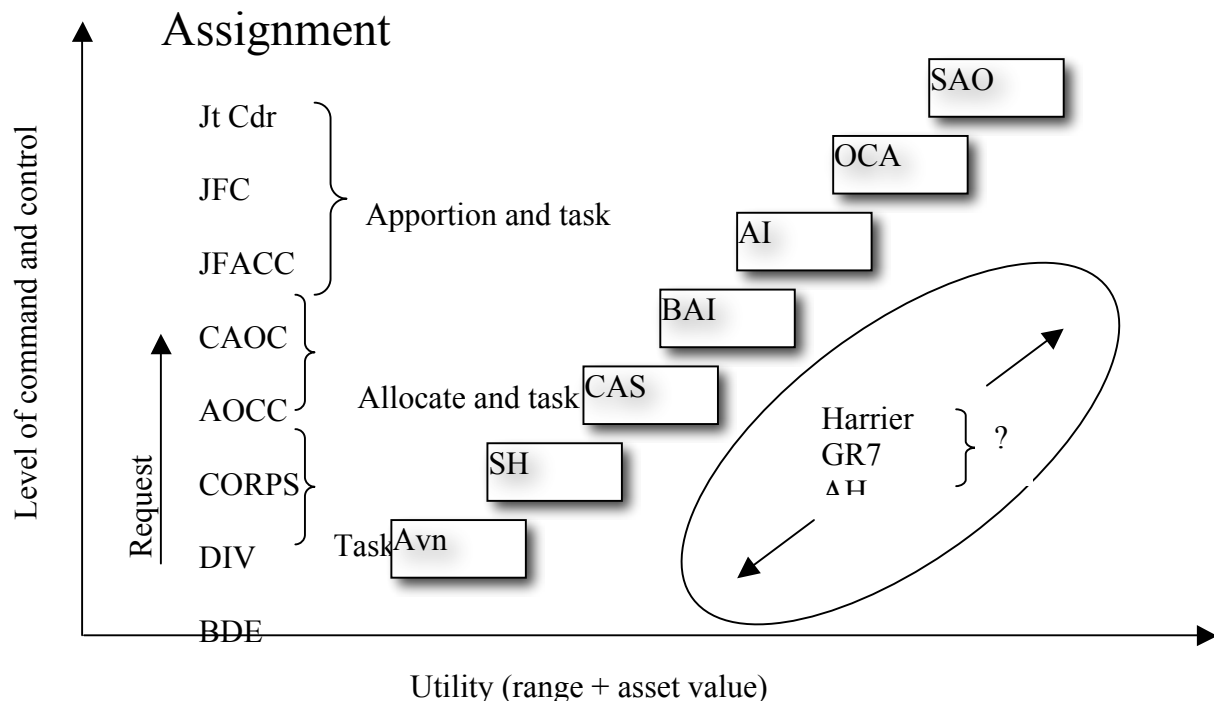
In general terms, the greater the range and capability of the asset (expressed in terms of range and flexibility), the higher the level at which it needs to be assigned. The relationship between a variety of platforms and their level of control is shown diagrammatically at Figure 2.1. In the past, a fairly clear distinction could be drawn between air systems and land systems, with their apportionment and tasking arranged

¹ AP 3000, p. 31.

² This section is based largely on the process outlined in Part 3, Section I of the RAF *Air Operations Manual*.

³ AP 3000.

accordingly. Now, however, the range and capability of modern systems, such as attack helicopters, ATACMS and Harrier GR7, transcends organisational boundaries, complicating the assignment process.



Key:

Organisations

AOCC Air Operations Coordination Center
 BDE Brigade
 CAOC Combined Air Operations Center
 Missile System
 Div Division
 Air Corps)
 JFACC Joint Force Air Component Commander
 Air Interdiction
 JFC Joint Force Commander
 Jt Cdr Joint Commander

Air Roles/Capabilities

AI Air Interdiction
 AH Attack Helicopter
 ATACM Army Tactical
 Avn Aviation (Army
 BAI Battlefield
 CAS Close Air Support
 GR7 Harrier GR7
 OCA Offensive Counter Air
 SAO Strategic Air Operations
 SH Support Helicopters

Figure 2.1: Command and Control of Air Platforms¹

The command and control of all operations requires a process that links decisions with actions. Boyd describes this process as the observation, orientation,

¹ Based on a chart presented by RAF Air Warfare Centre, February 1997.

decision and action cycle, or OODA loop.¹ To retain the initiative in combat operations, it is essential to execute the cycle more quickly than the enemy. RAF air power doctrine describes the cycle in terms of analysis, planning, implementation and assessment.² In air/land operations, the process begins with an analysis of the overall campaign objectives and their priorities, which enables an estimate of the situation to be completed, this is known as the air estimate. The air commander then develops a concept of air operations, known as the air operations directive, which, in effect, states *what* has to be done. The next stage, the *how*, involves the development of the Master Air Attack Plan (MAAP), which is based on the Joint Prioritised Integrated Target List (JPITL), the air defence plan and the airspace control plan. An apportionment recommendation can then be made based on these plans. The *who*, *when* and *where* are laid out in the Air Tasking Order (ATO) and associated Airspace Control Order (ACO), which are developed centrally and disseminated to units for execution. Depending on the complexity of the operation, the process can take up to 72 hours to complete.

This process reflects a highly refined scientific approach to operations and allows air assets to be tasked to the area of greatest need. It also embodies the principles of centralised control at the highest practical level; however, it is highly prescriptive and may lack the responsiveness to deal with rapidly changing circumstances. In practice, the process reflects a command-by-plan methodology. Moreover, it also depends on a well-furnished and robust communication system, which is an obvious centre of gravity for an enemy attacker. More fundamentally, the scientific process of ‘number crunching’ targets gives the appearance of an attrition approach to warfare in which counting the number of enemy units destroyed becomes the focus of effort rather than assessing the overall operational effect.³

Although air power doctrine recognises the value of decentralised execution, in practice, the need for highly integrated air operations leaves little scope for decentralisation. Since targets, routes, timings and packages are all centrally organised, there is little in the execution left to be organised at lower levels, apart from perhaps selecting crews and aircraft tail numbers! To those used to a decentralised style of control, the centralised control of air power can look like micro-management. Overall, while the process may be necessary to ensure the proper employment of high value air assets (such as fixed-wing strike aircraft), it may not be suitable for the every day employment of less scarce assets or systems with more limited theatre-wide utility, such as battlefield helicopters.

¹ Colonel John R. Boyd, USAF (ret.) is the father of the ‘OODA Loop’ concept, which has permeated US Army, Marine Corps, Air Force, and even business thinking along with its related notion of cycle time. For information on the OODA Loop, its evolution and impact on others, see Dr Grant T. Hammond, *Paths to Extinction: The US Air Force in 2025*, Research Paper Presented To Air Force 2025, August 1996.

² RAF *Air Operations Manual*, p. 3.I.1.

³ See comments on a clash of cultures in Brigadier General Robert H. Scales, Jr., *Certain Victory: United States Army in The Gulf War*, Office of the Chief of Staff United States Army, Washington, DC, 1993, p. 174.

CONCLUSION

While battlefield helicopters fall within the definition of air power, not all the tenets of air power doctrine apply to them in the same way as they do to high-performance fixed-wing aircraft. Similarly, while air power doctrine goes some way in explaining how helicopters might be used during operations, it does not provide a comprehensive framework for their employment. Helicopters can be used to substitute or supplement fixed-wing aircraft in the conduct of the main air power roles, but their contribution will often be peripheral to the main air effort. On the other hand, they provide essential capabilities for some combat-support air operations, but air power doctrine provides only limited guidance in this area.

The central tenet of air power doctrine is the centralised control and decentralised execution. However, the main methodology used for the command and control of air power, the Air Tasking Order process, leaves little scope for the decentralisation and is closer to a command-by-plan style than a command-by-direction. While this may be suitable for a large number of air operations, it is not suitable as a command methodology for all battlefield helicopter operations. It is therefore necessary to consider Army concepts of land operations to see how well they match up to the capabilities offered by battlefield helicopters.

CHAPTER THREE

HELICOPTERS AND LAND OPERATIONS

INTRODUCTION

Analysis of the relationship between helicopters and air power doctrine reveals that, for the most part, helicopters play only a supporting or peripheral part in the air power campaigns of control of the air and strategic air operations, but they could make a significant contribution to anti-surface-force operations. They also have important roles in many combat-support air operations. In many respects though, air power doctrine does not appear to offer a comprehensive framework for the employment of battlefield helicopters.

Since the majority of battlefield helicopter roles are intimately connected to the ground environment, it is also necessary to examine concepts of land operations to identify appropriate arrangements for their command and control. This chapter first examines the British Army's approach to the conduct of operations, with particular reference to the concept of manoeuvre. The role of helicopters in manoeuvre is then considered, before discussing other roles for helicopters in support of land operations.

THE CONDUCT OF OPERATIONS

The British Army's approach to the conduct of operations is centred on the *manoeuvrist* approach to warfare, in which attacks on the enemy's will and cohesion are seen as the key to victory, rather than trying to defeat him through attrition and physical destruction.¹ The aim is to keep the enemy constantly off balance by pre-empting, dislocating and disrupting his activities. At the same time, the enemy's cohesion is attacked by overloading his decision making process, causing paralysis, inaction and a breakdown of resistance. This is achieved through a combination of firepower, tempo, simultaneity and surprise. Many other forces, including the US Army, US Marine Corps and Australian Army, have adopted similar approaches based on the theory of Manoeuvre Warfare.² Although these concepts have gained wide acceptance only relatively recently, the theory of Manoeuvre Warfare is far from a new concept, and has its origins in the writings of the ancient Chinese philosopher, Sun Tzu. In more recent times, the theory has been developed by strategists such as Liddell Hart, Fuller and Tuchachevski, while contemporary authors, such as Simpkin, Lind and Luttwack have organised the concepts into a unified theory.³

¹ British Army Doctrine Publication (ADP), Vol. 1, *Operations*, June 1994, p. 2-3.

² US Army Field Manual (FM) 100-5, *Operations*, 1993; US Marine Corps Force Marine Field Manual (FMFM) 1, *Warfighting*, 1994; and Australian Army Manual of Land Warfare (MLW), Vol. 1, *The Fundamentals of Land Warfare*, 1995.

³ See Hooker, R.D., 'The Mythology Surrounding Manoeuvre Warfare', *Parameters*, Spring 1993, p. 33; quoted in Major P.S. Smith, 'Manoeuvre Warfare – An Aviation Perspective', *Fort Queenscliff Papers – 1995*, Australian Army Command and Staff College, Queenscliff, Victoria, 1995, p. 143.

What is Manoeuvre?

British Army doctrine describes manoeuvre as ‘seeking to get into a position in respect to the enemy from which force can be threatened or applied’.¹ Thus, manoeuvre comprises elements of both movement and firepower. While manoeuvre may often be thought of only in terms of surface manoeuvre forces (eg. armour and infantry), conceptually, there is no intrinsic reason why air power cannot be considered capable of manoeuvre, although only recently this has been accepted in Army doctrine.² The characteristics of air power make it especially well suited to the conduct of manoeuvre. As Pivarsky points out:

Air power, which is unencumbered by the problems of surface movement, is able to manoeuvre at great speed into a position of advantage with respect to the enemy. It can apply both direct and indirect fires from great range and altitude. Air power’s tempo, timing and means of attack can be continually adjusted to keep an enemy off balance while protecting the force.³

It is all the more surprising, therefore, that US Joint Doctrine recognises only land and naval surface manoeuvre.⁴ In British Army doctrine a distinction is made between air and ground manoeuvre as follows:

- **Ground Manoeuvre.** The positional advantages gained by ground manoeuvre forces are unique and irreplaceable by other means. Seizing, holding and denying ground, blocking and penetrating enemy forces all contribute directly to success. The effects of ground manoeuvre can be sustained and a long-term presence can be established in a given area.⁵
- **Air Manoeuvre.** Manoeuvre by air platforms is significantly more flexible, long reaching and responsive than manoeuvre by ground platforms. But it has relative limitations; it has greater vulnerability, it is susceptible to weather (decreasing) and it can only sustain a presence or effect for a finite period. Manoeuvre is therefore enhanced when a ground element deploys to sustain the initial effects, particularly when operating in a compatible time scale. This should not constrain the long reach and flexibility of employment of air manoeuvre; on the contrary, it can redress some of its inherent limitations. Air manoeuvre is manoeuvre unconstrained by ground. Air mobility is vertical envelopment, the positioning of a force by air transport.

¹ ADP 1 Vol. 1, p. 5-3.

² In the 1986 version of FM 100-5, air interdiction was referred to as simply support for ground manoeuvre. The doctrine stated ‘Close operations bear the ultimate burden of victory or defeat. The measure of success of deep and rear operations is their eventual impact on close operations.’ This doctrine stemmed from the belief that air operations could not decisively destroy enemy forces in depth, only delay or disrupt their manoeuvre potential and arrival at the front. See Major Robert J. Hamilton, *Evolution of Army and Air Force Airpower Thinking and Doctrine since the Vietnam War*, School of Advanced Airpower Studies, Maxwell Air Force Base, Alabama, June 1993.

³ Lieutenant Colonel Carl R. Pivarsky Jr., *Airpower in the Context of a Dysfunctional Joint Doctrine*, Air War College Maxwell Paper No. 7, Maxwell Air Force Base, Alabama, February 1997, p. 5.

⁴ US Joint Chiefs of Staff Joint Publication (Joint Pub) 3-0, *Doctrine for Joint Operations*, 1 February 1995, pp. IV - 8-9.

⁵ ADP Vol. 1, p. 5-3.

While this appears to be considerably more progressive than US Joint Doctrine, the definition of air manoeuvre still seems to be couched in terms of the land manoeuvre paradigm and does not appear to match the contemporary realities of air power. For example, vulnerability is a relative term subject to a range of situational interpretations: aircraft operating outside the range of an adversary's anti-aircraft systems are considerably less vulnerable than tanks operating within the range of his anti-tank systems, or than infantry exposed to sniper fire. Moreover, while it is true that individual air power platforms can only sustain presence for a finite period, aircraft can be deployed indefinitely to an area 'from which force can be threatened or applied'. For example, the maintenance of UN safe areas in northern and southern Iraq by allied air power meets the definition of manoeuvre, while NATO air strikes on the Bosnian Serb Army during Operation *Deliberate Force* in 1995 could be considered to have had a manoeuvrist effect. In both situations, air power has shown it is able to present an enduring threat and able to apply sustained shock action on an adversary.

Nonetheless, such operations can be very demanding in terms of air resources, and are likely to be achievable only when friendly air power is overwhelming. Moreover, experiences in Korea and Vietnam have shown that adversaries can sometimes find ways of coping with an omnipresent air threat. Although air power will often have vital applications in such situations, it may not always be able to present an enduring threat and impose a manoeuvrist effect. Indeed, in some forms of conflict, such as those found in Grozny, Belfast or Sarajevo, the application of fixed-wing air power may even be counterproductive. Thus, there is likely to be a continuing requirement for ground manoeuvre. How, then, does the British Army intend to put the theory of manoeuvre warfare into practice?

Core Functions

In British Army doctrine the concept is put into place through the core functions of *finding*, *fixing* and *striking* the enemy.¹ Finding is the process of locating, identifying and assessing the enemy, while fixing denies the enemy his goal, distracts him and deprives him of his freedom of action. Fixing the enemy gains freedom of action for friendly forces and enables them to strike the enemy. Striking involves using manoeuvre to get into a position of advantage in respect to the enemy from which force can be threatened or applied: this is the essence of the manoeuvrist approach. The enemy can then be hit unexpectedly, or in superior force, at the point selected in order to defeat him.

The core functions are organised within the framework of close, rear and deep operations, as illustrated at Figure 3.1. Close operations are those that involve friendly forces in direct contact with the enemy and are usually conducted at short range and in immediate time scales. Rear operations involve protecting the force, sustaining combat operations and retaining freedom of manoeuvre of uncommitted forces. Deep operations are shaping operations and are not necessarily defined by geography, but also contain a temporal dimension. They are usually conducted at long range or over a protracted time-scale against forces or resources not currently engaged in close operations. In line with the manoeuvrist approach, deep operations focus on attacking

¹ *Ibid.*, pp. 2-11 to 2-15.

key enemy vulnerabilities and are directed towards his centre of gravity, or *Schwerpunkt*.¹

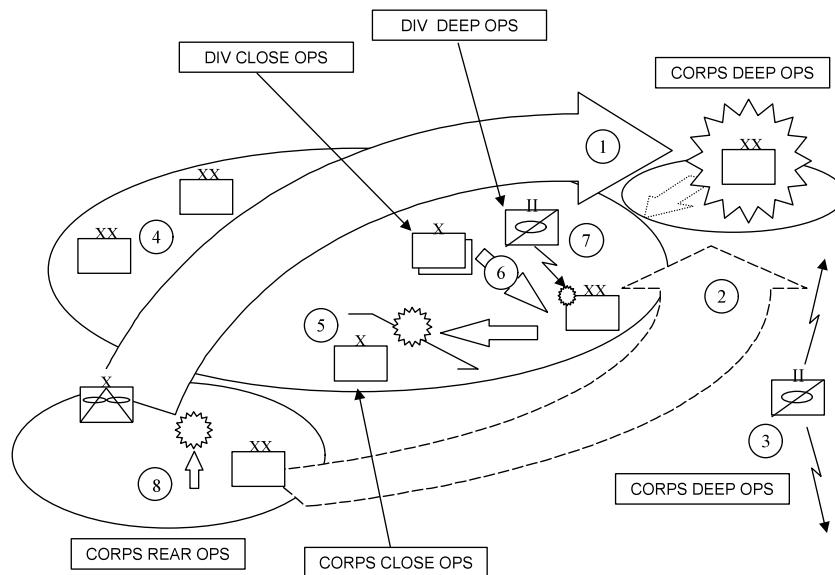


Figure 3.1. The Operational Framework².

Explanation of Figure 3.1

The **corps deep operation** (1) to fix the enemy depth division - the corps commander's current Main Effort - is at the same time a close operation for the aviation brigade concerned. Meanwhile, the deployment of a corps medium reconnaissance regiment to secure the right, open, flank is also a corps deep operation (2). Its purpose is not only to monitor enemy activity on that flank, but also to screen the attack (3), a planning option of the corps reserve division to manoeuvre and strike the enemy depth division. The situation in the area of operations (4) of the left-hand defending division is stable.

The operation of the right-hand defending division is a **corps close operation**, as it is primarily an operation which, from the corps perspective, is designed to strike the enemy and to eliminate a discrete part of his combat power. This division mounts a counter-attack, involving close operations (one brigade) to fix (5) and (two brigades) to strike (6) the enemy, whilst its deep operation (7), cued by the divisional reconnaissance regiment, protects its flanks and fixes elements of the attacking enemy division.

Corps rear operations, intended to ensure freedom of action of the force, include a close operation (8) to counter an enemy deep operation, and so protect uncommitted manoeuvre forces, logistic units and the lines of communication of the corps.

Air operations are an integral part of the Corps framework of operations. For example, BAI could be used to assist Corps deep operations; CAS; could support both the aviation brigade's and the divisional close operations, and Corps rear operations.

¹ *Schwerpunkt* is a German term, which, roughly translated, means crucial point. Martin van Creveld, *Air Power and Manoeuvre War*, Air University Press, Maxwell Air Force Base, Alabama, July 1994, p. 3.

² Source: ADP Vol. 1, *Operations*, Figure 5.2.

Deep operations include both *deep fires* and *deep manoeuvre*. Deep fires are provided by assets such as electronic warfare, Special Forces and offensive air support and are used to set the conditions for other operations, while deep manoeuvre is employed to create a decisive effect by attacking an enemy's centre of gravity.¹ As the range and capability of land systems have increased, the capacity of the land component commander to conduct deep operations into the area previously under the control of the air commander has also grown. An emerging issue is how to delineate responsibility for the command and control of deep operations between the land and air commanders. Since helicopters are one of the primary means by which the land commander conducts deep operations, this is a significant issue in determining arrangements for their command and control.

Many observers agree that air interdiction and manoeuvre will often be most effective when employed in synchronisation to produce positive synergies, such as those achieved in the Western Desert during World War II.² Actual or threatened surface manoeuvre can force an enemy to respond by attempting rapid movements or resupply. These responses provide targets for interdiction efforts, creating an agonising dilemma for the enemy. If the enemy attempts to counter the surface manoeuvre, his forces will be exposed to unacceptable losses from interdiction; if the enemy employs measures to reduce such losses, his forces will not be able to counter the surface manoeuvre. Gaining maximum advantage from the enemy's dilemma depends on the ability of friendly surface forces to exploit the enemy's delay and disruption.³ Although Army and Air Force doctrines seem to agree on this concept, it is not always clear which commander should control deep battle synchronisation.

Command and Control of the Deep Battle

In the extended, non-contiguous battlefield, the land component command expects to design his battle and scheme of manoeuvre throughout his area of operations.⁴ However, to avoid the dilution of air power capabilities, air power doctrine stresses the need for centralised control over all theatre air assets. The key to resolving the issue lies in identifying appropriate supported/supporting relationships between ground and air forces under the operational direction of a joint force commander. This is achieved through an appropriate division of the responsibilities between subordinate commanders.

From the land commander's perspective, the theatre of operations is divided by geographic boundaries and height bands that establish separate areas of operations for each commander. Within his area of operations, a commander has authority to conduct operations, coordinate fire, control movement, and develop and maintain installations.⁵ Beyond this area, the land commander establishes an area of interest,

¹ British Army Directorate General of Development and Doctrine discussion paper *Towards an Air Manoeuvre Formation*, D/DGD&D/1/109/LW2, February 1997, p. 1.

² For a detailed discussion of the effects synergy in air/land operations, see Group Captain Andrew Lambert, 'Synergy in Operations', in Group Captain Andrew Lambert and Arthur C. Williamson (Eds), *The Dynamics of Air Power*, RAF Staff College, Bracknell, Berkshire, 1996, pp. 40-67.

³ Air Force Manual (AFM) 1-1, Vol. II, *Basic Doctrine of the United States Air Force*, Department of the Air Force, 1992, Washington DC, p. 164.

⁴ Major General M.D. Jackson, 'The Army Contribution to the Air Battle', *Air Power & Space – Future Perspectives*, Air Power Conference 12-13 September 1996, Queen Elizabeth II Conference Centre, London, p. 4.

⁵ ADP Vol. 1, p. 5-18.

within which he monitors activities that may influence the outcome of current and anticipated missions. Additionally, the land commander establishes an area of influence within his area of operations according to his ability to acquire and engage targets (in US Army doctrine this area is referred to as the commander's 'Battlespace').¹ To reduce the danger of fratricide from uncoordinated attacks, the land commander requires positive control of all fire and movement within his area of influence. The limit of an area of influence is normally defined by the Fire Support Coordination Line (FSCL); beyond the FSCL the land commander would expect coordination of fire within the remainder of his area of operations. The relationship between these areas is shown diagrammatically at Figure 3.2.

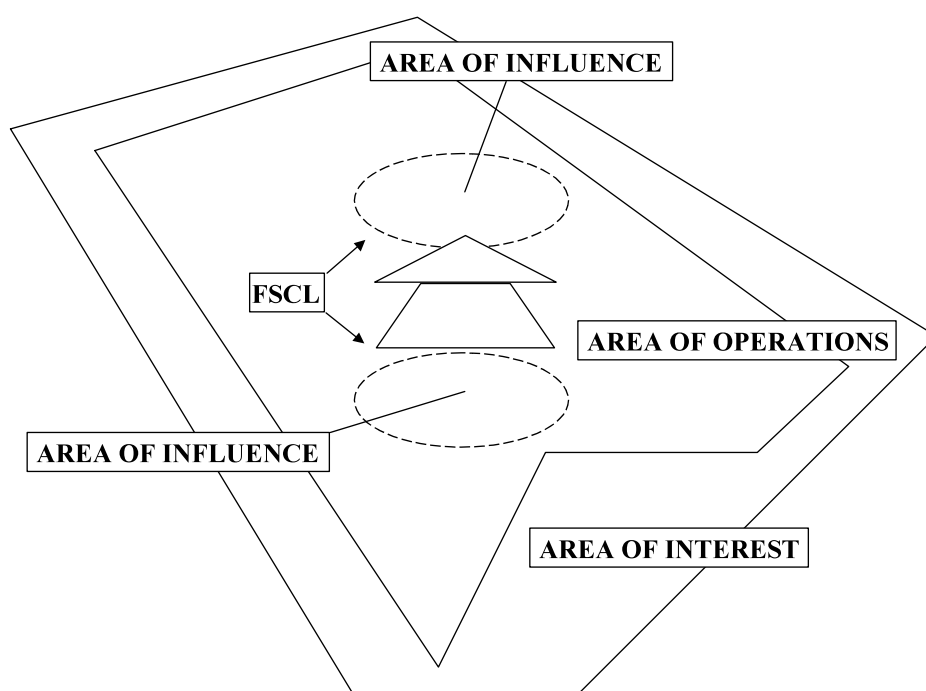


Figure 3.2: Control of Operations²

While the need for the land commander to control fires inside the FSCL is compatible with air power doctrine, there is debate over how far the FSCL should extend. Traditionally land commanders have defined the FSCL on the basis of the reach of their organic systems, which until the advent of attack helicopters was usually no more than about 30 kilometres beyond the forward line of his own troops (based on the reach Multiple Launch Rocket System (MLRS)). If the land commander's battlespace were to be defined by the reach of attack helicopters, it would extend to far greater strategic depth. This would significantly decrease the number of targets that the air component commander would be able to engage without deferring to the requirements of the land component commander. In effect, it would place control of most air power assets under the land component commander to fall

¹ Battlespace is a physical volume that expands or contracts in relation to the ability to acquire and engage the enemy. It includes the breadth, depth, and height in which the commander positions and moves assets over time. Battle space is not assigned by a higher commander and extends beyond the commander's AO. FM 100-5, Ch. 6.

² Source: ADP Vol. 1, *Operations*, Figure 5.3.

within his scheme of manoeuvre and the scheduling of his fire support requirements. This process runs counter to the need for centralised control of air power assets to meet theatre-wide objectives.

The importance of this seemingly parochial doctrinal issue was illustrated in the Gulf War. The FSCL was moved back and forth in the final hours of the Gulf War in such a way that the air commander could not strike targets because they were reserved for Army fires, and coordination with the highly mobile corps proved too difficult.¹ Yet, at the same time, the Army commanders complained that they were unable to strike deep targets beyond the FSCL, which they had the capacity to hit with their attack helicopters and long-range artillery, because they were unable to coordinate with the air component commander.² The consequence was that a large proportion of the Iraqi Republican Guard escaped, and one of the principle objectives of the theatre campaign was not achieved.³

One way of resolving the issue is for the joint force commander to nominate lead and supporting commanders for specific operations and to identify which operation represents the main effort. The emphasis upon air operations and surface manoeuvres can then be varied and the location of the FSCL moved accordingly, depending on the strategic and operational situation. The joint force commander could choose to employ either air interdiction or surface manoeuvre as the principal means to achieve the intended objective and nominate the appropriate commander to execute that mission (with other components supporting the lead component). For example, the air component commander would normally expect to be the lead commander for missions such as suppression of enemy air defences, with support from the land component with assets such as MLRS or attack helicopters. For ground manoeuvre, the land component would normally lead the operation and be supported by assets from the air component commander. The lead commander would need to be allocated an area of operations, regardless of whether he was a land or air component commander. This arrangement would be at variance from US doctrine, which defines areas of operations only for land and naval forces.⁴ The failure to recognise air component commanders as potential manoeuvre commanders and allocate them an area of operations appears to be a major shortcoming in US doctrine. In the case of the fleeing Iraqis, nominating one of the commanders as lead for the specific mission, and providing him with an appropriate area of operations, might have mitigated the situation. Where, then, do battlefield helicopters fit into this scheme?

THE ROLE OF HELICOPTERS IN MANOEUVRE

The ability of helicopters to bypass surface obstacles, coupled with their reach and speed, means that compared to surface forces, they can operate at considerable operational depth with high tempo. Additionally, their ability to operate from relatively austere bases, and to loiter in forward areas, means that they can sustain a

¹ See Michael R. Gordon and General Bernard E. Trainor, *The General's War: The Inside Story of the Conflict in the Gulf*, Little, Brown & Co., Boston, 1995, pp. 411-413.

² Brigadier General Robert H. Scales, Jr., *Certain Victory: United States Army in the Gulf War*, Office of the Chief of Army Staff, Washington DC, 1993, p. 290.

³ Destruction of the Republican Guard was established as one of three key military objectives of Operation *Desert Storm*. Colonel Edward C. Mann III, *Thunder and Lightning: Desert Storm and the Airpower Debates*, Air University Press, Maxwell Air Force Base, Alabama, April 1995, p. 91.

⁴ Joint Pub 3-0, p. II - 19.

presence and impose a manoeuvrist effect that can be difficult to achieve with fixed-wing aircraft. Thus, the characteristics of helicopters make them an excellent platform for the conduct of air manoeuvre. Nonetheless, they also have limitations. Their reach is generally not as great as fixed-wing aircraft, and unless employed correctly, helicopters are vulnerable to a wide range of weapon systems. Moreover, they will often need considerable support to sustain their effect. Consequently, it will normally be necessary to coordinate air manoeuvre by helicopters with other forces, such as artillery or fixed-wing aircraft, to mitigate these limitations.

Air manoeuvre by helicopters should be employed in conditions that minimise exposure to enemy forces while maximising their ability to see the battlefield. Air manoeuvre is conducted in an unforgiving medium that lacks some of the inherent protection afforded by the ground environment. However, modern battlefield helicopters are now able to operate under near all-weather, limited-visibility, and night conditions. These aircraft permit operational and tactical operations when enemy forces are most likely to be moving, which is usually when they are most vulnerable. Hostile air defences are also at a disadvantage at night since many systems that can engage helicopters depend greatly on visual and optical acquisition methods.

Traditionally, helicopters have been employed as an adjunct to surface manoeuvre forces, where they bring important capabilities to the all arms team. In this role, helicopters provide an excellent platform for surveillance and reconnaissance; the direction of fire, either as artillery observers posts or as forward air control; airborne command and control; providing additional firepower; enhancing the mobility of surface forces; and providing combat service support, such as logistic resupply and casualty evacuation. However, using helicopters simply to enhance surface manoeuvre fails to exploit their full potential and ties the speed of the rotor to the speed of the track, in much the same way that early armoured warfare was constrained by infantry tactics.¹ Helicopter units, appropriately equipped and supported, are capable of conducting air manoeuvre. The conduct of manoeuvre by helicopters is closely aligned with the concepts of air mobility.

Air Mobility

Air mobility is sometimes regarded only in terms of the transport of infantry based units by helicopter, with the surface forces responsible for the application of firepower and achieving a manoeuvrist effect, albeit with continuing helicopter support. In such operations, the infantry unit operates as the manoeuvre element and is supported by helicopters. However, air mobility can embrace a much wider spectrum of operations. At one end of the spectrum is air portability, in which helicopters or even fixed-wing transport aircraft are used simply to transport surface forces, which subsequently regroup as tactical units before engaging in combat. The transport portion of such operations is feasible only in a benign environment. The other end of the spectrum is represented by what the US Army terms air assault. In air assault operations helicopters are used to fulfil all the functions of manoeuvre, including reconnaissance, mobility, supply, command and the application of firepower. In such operations, helicopter units can be employed as the manoeuvre arm with support from other forces as necessary.

¹ R.E. Simpkin, *Race to the Swift: Thoughts on 20th Century Warfare*, Brassey's Defence Publishers, 1985, p. 125.

The concept of a helicopter-based air manoeuvre force is not new, and has been an accepted part of US Army doctrine since the Vietnam era. It has also been widely examined in the European context. In 1983, General Dr F.M. von Senger und Etterlin, the then Commander-in-Chief Allied Forces Central Europe, proposed that NATO develop an 'air mechanised' force. The force would be based on 'main battle air vehicles' (essentially attack helicopters) and organised to be tactically autonomous and be used for deep operations independently from ground forces.¹ The term 'air mechanisation' neatly encapsulates the broad nature of the concept and has clear parallels with the development of ground mechanisation in the 1920s and 1930s. US Army Aviation doctrine describes air manoeuvre forces as:

Aviation manoeuvre units that operate in the ground environment. They engage targets by fire from covered and concealed positions. Their operations are similar to ground manoeuvre operations in that they tailor their movement to the terrain and use supporting fires. These units are integrated into the tactical plan of the ground force commander. They can control terrain by denying the enemy its use by direct aerial fire for limited periods of time.²

This definition highlights the need for air manoeuvre units to be assigned a mission and an area in which to achieve the desired effect, in much the same way that infantry and armoured units are assigned ground manoeuvre missions. This approach requires a significantly different form of command and control than that required for close air support or battlefield interdiction. However, the claim that air manoeuvre units are 'integrated into the tactical plan of the land commander' seems to deny the opportunity to employ them as part of the air commander's tactical plan and unnecessarily limits their potential application.

Command and Control of Air Manoeuvre

Effective employment of manoeuvre requires a decentralised style of command in which the commander has freedom to use his initiative to make timely decisions to fulfil his superior commander's intent.³ Decentralised command enables subordinates to seize fleeting opportunities without reference to higher authority. This approach is equally applicable to air manoeuvre as it is to ground manoeuvre. In the fluid battlefield environment, rapid reaction is vital and it is unlikely that there would be sufficient time for air manoeuvre missions to be referred to the joint force air component commander for inclusion in the joint prioritised, integrated target list and subsequently promulgated in the ATO. Nonetheless, because of the need to prevent fratricide, it would remain vital for all air movements to be coordinated with the airspace control authority.

The question remains as to whether air manoeuvre by helicopters should be controlled exclusively by the land commander, or whether it could also be controlled by the air commander. On the face of it, this question could be answered by simply considering ownership of assets. On this logic, since the principal means of conducting air manoeuvre (attack helicopters) are owned by the Army, they should be

¹ General Dr F.M. von Senger und Etterlin, 'New Operational Dimensions', *Royal United Services Institute Journal*, Vol. 128, No. 2, June 1983, p. 12.

² FM 1-100, *Doctrinal Principles for Army Aviation in Combat Operations*, February 1989, Glossary.

³ See Richard E. Hayes, 'Alternative Approaches to Command' in *Command Arrangements for Peace Operations*, National Defence University, Washington DC, May 1995.

controlled by the land component commander. However, such an approach smacks of parochialism and fails to address the fundamental issues. Alternative approaches involve a more fundamental appraisal of the nature of helicopter operations.

Army doctrine holds that, since helicopters are intimately linked to the ground environment, they should be regarded as part of the land component. This argument is taken to extremes in US Army aviation doctrine, which states that although attack aviation breaks friction with the surface of the earth, they operate in the ground environment and not the aerospace environment.¹ This definition has probably been contrived to justify keeping Army aviation within the control of the land commander. According to US joint doctrine, the air component commander is the supported commander for the overall air interdiction effort; thus, if deep operations by attack helicopters were accepted as air interdiction, they would come under his control.² However, describing deep operations by attack helicopter as manoeuvre instead of air interdiction, keeps them under the control of the land component commander. This dichotomy is a reflection of the dysfunction in US joint doctrine regarding control of the deep battle.³ A more flexible approach to the command and control of air manoeuvre would consider the required level of integration with other forces. If the operation requires extensive integration with surface elements, it should be controlled by the land commander; however, if the operation is conducted mainly by air assets, the air commander should control it.

While the control of attack helicopters in deep operations is a contentious issue, there is less dispute of control of other helicopters in other roles.

OTHER HELICOPTER ROLES IN LAND OPERATIONS

In addition to conducting air manoeuvre, battlefield helicopters are capable of supporting many other functions of combat identified in British Army doctrine.⁴ The functions of combat include the application of firepower, aiding protection, gathering information and intelligence, supporting command and control, and assisting with combat service support. These functions can be considered within the traditional army framework of combat, combat support and combat service support tasks, although it is interesting to note that the US Army appears to be ready to abandon this framework.⁵

Combat Tasks

One of the principal combat tasks of armed helicopters is the provision of firepower, which can be used in isolation from manoeuvre, or as an integral element of the surface/air manoeuvre forces.⁶ The ability of attack helicopters to link reconnaissance,

¹ United States Army Training and Doctrine Command (TRADOC) Pamphlet 525-XXX, *US Army Concept for Aviation*, September 1993, p. 6, quoted in Lieutenant Pivarsky, *Airpower in the Context of a Dysfunctional Joint Doctrine*, p. 16.

² Joint Pub 3-0, IV-11.

³ Pivarsky, *Airpower in the Context of a Dysfunctional Joint Doctrine*, p. 20.

⁴ The Functions in Combat are conceptual tools for the planning and conduct of operations. ADP Vol. 1, p. 5-1.

⁵ TRADOC publication 11-9, *Blueprint of the Battlefield*.

⁶ Armed helicopters include all helicopters fitted with weapons and weapon systems. Within this broad definition there are three main types: anti-tank helicopters, which are usually developed from utility helicopters and have 'button-on' armament specifically designed for the anti-tank role (eg. Lynx/TOW); attack helicopters, which are designed to seek out, attack and destroy enemy targets (eg.

intelligence, surveillance and target acquisition systems with firepower delivery in a single platform provides an extremely potent capability. Firepower missions include anti-armour, air combat, aerial security, Joint Air Attack Team (JAAT) operations, providing supporting fires and suppression of enemy air defences. Although many of these missions relate mainly to mid- to high-intensity conflicts, they have specific application in other forms of conflict. For example, US Army Apache helicopters have been used as a powerful deterrent force during NATO operations in Bosnia.¹

Firepower in isolation from manoeuvre is used to delay, disrupt or destroy an adversary's capabilities, and is analogous to air interdiction. British Army doctrine recognises that joint targeting is essential in the application of firepower at theatre level, and that modern command systems obviate the need for rigid and immutable groupings of firepower delivery systems. In these circumstances, it would seem appropriate to integrate attack helicopter operations with the air battle management process under the control of the air component commander. However, it also makes clear that when firepower is combined with manoeuvre, the manoeuvre commander must control the fire. Thus, during manoeuvre operations, attack helicopters will need to be under the control of the manoeuvre commander so that they can fully integrated into his scheme of manoeuvre.

Attack helicopters can also employ their firepower to protect other forces. In this role, escorting transport helicopters during air mobile or combat search and rescue operations would appear to be a natural task, as would protection of airborne or air-landed troops during the early stages of an insertion. Attack helicopters are also capable of contributing to the protection functions of air defence, counter-air and counter-mobility by fixing and, if necessary, destroying adversary capabilities. Air defence and counter-air efforts are aided through air combat operations. According to US Army Aviation doctrine, air combat operations must support the force commander's overall scheme of manoeuvre, form part of the forward area air defence system, and may be controlled by ground or aviation manoeuvre force commanders.² However, to prevent fratricide in the air-to-air arena it is vital that such operations remain subject to the control measures imposed by the airspace control authority (normally the Joint Force Air Component Commander during joint operations). Transport helicopters also support air defence through the aerial movement and resupply of air defence weapons and forces, although such tasks would normally be considered combat support or combat service support activities.

Combat Support Tasks

Combat support is the operational assistance given to combat elements by other forces. Battlefield helicopters can provide combat support to combat forces by conducting reconnaissance and surveillance, supporting command and control, and the air movement of combat supplies. Specialised battlefield helicopters, such as the US Army's EH-60 Quickfix helicopter, are also able to conduct the combat support task of electronic warfare.

AH-64 Apache); and finally, armed reconnaissance helicopters, which are optimised for the reconnaissance role, but also capable of attacking a limited number of targets (eg. RAH-66 Comanche). It is conceivable that in the future, fighter helicopters designed specifically for the air-to-air role may also be developed.

¹ See 'The Endeavor to Reunite Bosnia', *Rotary and Wing*, Vol. 31, No. 6, June 1997, p. 44.

² FM 1-100, p. 2-17.

Helicopters contribute to the information and intelligence function through surveillance and reconnaissance. Surveillance involves the continual collection of information, whereas reconnaissance involves the seeking out of particular information. Helicopters can be fitted with long-range passive and active sensors operating across wide bands of the electro-magnetic spectrum, but compared to ground-based systems or other aerospace platforms (satellites, fixed-wing aircraft or even airships), they are relatively inefficient platforms for the conduct of surveillance. Nonetheless, the perspective offered by helicopters can be extremely valuable, and the ability to hover offers a useful capability in certain environments such as urban areas. Surveillance by helicopters would normally be integrated into a theatre effort and controlled at a high level.

Reconnaissance operations provide commanders with information and intelligence that reduces uncertainties about the terrain, weather, nuclear or chemical contamination, and the disposition of friendly and enemy forces. Related tasks are the direction of indirect fire and airborne forward air control, tasks formally conducted by the Air Observation Post. Helicopters provide an extremely useful reconnaissance platform, extending the eyes and ears of the ground commander beyond the range of ground based systems. They are also able to conduct scouting and screening tasks in a similar manner to ground units (during security missions these tasks could be combined with combat assets). Commanders at virtually every level of command would benefit from the capabilities offered by reconnaissance helicopters; however, there are unlikely ever to be sufficient helicopters to satisfy all requirements for air reconnaissance and finding the correct level for their command and control presents a significant challenge. Held at too high a level they are unlikely to offer the responsiveness needed, but held at too low a level their capabilities are likely to be dissipated. Improvements in information technology should improve the distribution of information gathered by reconnaissance assets generally. Providing that the distribution systems are sufficiently robust, this should enable control of reconnaissance helicopters to be centralised at a high level, whilst still providing the information required further down the command chain. Moreover, the introduction of new and relatively inexpensive reconnaissance platforms, such as Uninhabited Aerial Vehicles (UAVs), may reduce the requirement for reconnaissance helicopters.

Reconnaissance helicopters can be grouped with surface reconnaissance assets, such as armoured reconnaissance, to operate as a team. Such teaming should be organised to ensure that the capabilities of each asset is fully utilised and not constrained by the limitations of the other. Reconnaissance tasks can expose helicopters to considerable risk and balancing the requirement to minimise attrition of valuable assets against the need for information can be a difficult decision. Senior commanders with a broad view of theatre requirements are best placed to make such decisions, but unfortunately this principle runs against the need to provide junior commanders with the freedom and authority to act. Generally, the commander who must live with the long-term consequences of his decision is best placed to make this judgment.

There is an argument for helicopters employed in the 'direction-of-fire' role to be fully integrated into the command and control structure of field artillery units, since this function is such an important element of the artillery weapon system.¹ However, despite its merits, such an arrangement is likely to be too demanding in

¹ See comments by Lieutenant Colonel B.E. Blunt in *The Role of the Helicopter in the Land Battle*, Royal United Services Institute, London, 1972, p. 49.

terms of resources, and lead to under-utilisation during periods when the artillery is not engaged. Similar arguments pertain to the dedicated use of helicopters for airborne forward air control. In both cases, centralised control is essential to ensure that the assets can be applied to the area of greatest need.

Another important combat support task for battlefield helicopters is enhancing command and control. This includes using suitably equipped helicopters as airborne command posts, to act as radio relay, and for the movement of commanders and ground reconnaissance parties. It may also be necessary to use helicopters to deliver urgent consignments (such as orders, documents or key spare parts) as was the case during the 1991 Gulf War when US Navy helicopters were used to distribute the Air Tasking Order (ATO) to ships due to shortcomings in the communication networks.¹ Again, the challenge is balancing the advantages of providing commanders organic capabilities with the scarcity of assets. Pooling assets under centralised control would provide the mechanism for ensuring that the highest priorities were supported, but could critically reduce the responsiveness that can be essential in such tasks. The dynamics of the equation are such that the issue can only be resolved by analysing specific operational settings.

The air movement of combat forces and equipment is also a combat support operation and has applicability across the spectrum of conflict. These operations are conducted to support assets whose main mission is to engage and destroy enemy forces, but differ from air manoeuvre in that the helicopters are not usually task-organised with other combined arms forces to engage enemy forces directly. Combat support air movement tasks usually support close and rear operations, while air movement in support of deep operations is normally considered air manoeuvre. Air movement combat support tasks include: repositioning dismounted infantry or other forces and their organic equipment to prepare for future combat; emplacement of field artillery or other fire support assets; repositioning combat engineer forces; and repositioning critical tactical air defence weapons and systems. They are normally conducted by utility and cargo helicopters (eg. Puma/Blackhawk and Chinook) and it is usually necessary to provide the helicopters to the user unit only for the duration of the airlift. Thus, centralised tasking is the most appropriate method of controlling helicopter support for such operations, with the helicopters provided to the user unit either in support, in direct support or under tactical control as determined by the tasking organisation.

Combat Service Support Tasks

Combat service support, which includes logistical and administrative support, is critical to any combat operation. It determines the ability of a force to sustain itself and is decisive in setting the tempo of combat operations. Helicopters can support the combat service support requirements through the air movement of personnel, materiel, equipment and supplies, and by conducting aeromedical evacuation. Combat service support air movement operations differ from air manoeuvre and combat support in that they do not entail the movement of forces or assets whose primary mission is to engage and destroy the enemy. They include intra-theatre airlift, logistics resupply (including over-the-shore operations), equipment recovery (friendly and enemy), pre-positioning and movement of fuel and ammunition and the relocation of battlefield

¹ James A. Winnefeld and Dana J. Johnson, *Joint Air Operations; Pursuit of Unity in Command and Control 1942-1991*, Naval Institute Press, Annapolis, Maryland, 1993, p. 109.

systems, such as air defence, field artillery, and engineer equipment and materiel. These tasks are normally conducted by utility and cargo helicopters. Centralised tasking provides the most efficient mechanism for control of combat service support, with the helicopters provided in support of the user unit for a specified task or period. Combat service support tasks have wide utility across the spectrum of conflict and in non-combat operations (although in this context, *combat* service support may be a misnomer). Indeed, combat service support air movement is not limited to land forces and will often be performed in support of agencies such as non-government organisations or host-nation authorities.

Sensitivity to casualties in recent conflicts has highlighted the importance of efficient and timely casualty evacuation. Casualty evacuation is a combat service support function and includes battlefield pick-up of casualties, evacuation of casualties to initial treatment facilities, and subsequent movement of casualties to treatment facilities within the combat zone (aeromedical evacuation). Battlefield helicopters can support medical evacuation throughout close and rear operational areas, possibly during deep operations, either as dedicated air ambulances, or when diverted from other tasks. The need to dedicate assets will be determined by the priority placed on the task by the commander and the availability of helicopters. It will often be possible for transport helicopter units to maintain a limited number of aircraft on permanent stand-by for theatre-wide casualty evacuation. Alternatively, helicopters can be attached to units for specific operations, improving responsiveness.

Determining the degree of risk to which helicopters should be exposed can be a significant command and control issue during casualty evacuation operations. One approach is for helicopter parent command to issue strict directives for their employment, including criteria such as specified minimum distances from enemy forces. However, casualty evacuation will often be required in areas remote from the parent organisation and such directives are unlikely to take account of the complex variables involved. In the past, directives issued by a remote higher authority have often proved unworkable and individuals on the spot have often been best placed to make such judgments. Ultimately, only the commander of the helicopter is likely to have the intimate knowledge of the operating environment and the limitations of his aircraft to make the final decision. Although guidelines may prove useful, both the helicopter operating authority and the user unit must trust his judgment.

Special Operations

Special operations include overt and clandestine military operations conducted in pursuit of national objectives, with potentially high gain but at comparatively high risk.¹ Accordingly, special operations are always commanded from the highest appropriate level. This would normally be the theatre level and, where appropriate, the joint commander may establish a joint force special operations component commander. These operations are normally carried out in a joint or a combined environment or with host-nation forces and can be conducted across the spectrum of conflict.

Helicopters can be used to insert, resupply or extract Special Forces into and from their operational areas. They can also be used as an integral element of special operations during activities such as heliborne assaults directly onto the objective. The level of support required is best achieved with aircraft and crews dedicated to the task.

¹ ADP Vol. 1, p. 5-8

Specialist training and equipment enables these helicopters to penetrate denied areas and operate with precision under day, night, and in marginal weather conditions. However, the advantages of permanently assigning helicopters with Special Forces units needs to be balanced with the additional logistic support costs of operating a discrete fleet of aircraft.

Special operations will often demand a high level of security to achieve tactical and operational surprise. Nonetheless, liaison with other component operations will often be essential to coordinate and deconflict special operations with other operations; helicopter operations, for example, will need to be integrated with the airspace control plan. Establishing a special operations liaison element on the staff of other component commanders can facilitate liaison. For example, the liaison element with the joint force air component would coordinate and synchronise special air and surface operations with joint air operations. Special operations are often conducted in the deep battlespace, and therefore must be integrated into joint air operations planning and execution to provide for synergy, integration, coordination, and deconfliction.¹

CONCLUSION

The British Army's concept of manoeuvre warfare demands a decentralised style of warfare to allow subordinate commanders to seize fleeting opportunities. The framework of close, rear and deep operations provides a holistic view of the battlefield at the operational level, but does not necessarily offer the strategic perspective of air operations. A contentious issue remains the control of deep battle operations, which could be controlled by either the air or land component commander, depending on the availability of assets.

Battlefield helicopters offer a unique capability to conduct air manoeuvre, either using attack helicopters to engage targets directly, transport helicopters to position ground troops, or a combination of the two. In common with ground manoeuvre, effective employment of air manoeuvre will require a decentralised style of command, and will be severely constrained if it is subjected to the rigours of the ATO process.

Other helicopter roles in support of land operations include combat, combat support and combat service support tasks. Generally, the degree of centralised control for such operations will be determined by the availability of assets, but there are distinct advantages in providing dedicated helicopters for specific roles such as special operations.

¹ Joint Pub 3-56.1, *Command and Control for Joint Air Operations*, 14 November 1994, p. B-1.

PART TWO

HISTORICAL ANALYSIS

CHAPTER FOUR

EVOLUTION OF HELICOPTER FORCES IN THE UNITED KINGDOM

Flying can never be of any use to the Army.

Attributed to Earl Haig¹

INTRODUCTION

The British were involved with some of the earliest developments of helicopters in the United States during World War II, and used them widely during counter-insurgency campaigns in the period after the War. The period was also marked by arguments between the Royal Air Force (RAF) and the British Army over command and control of aircraft in support of land operations, a dispute brought into focus over the ownership of helicopters. The emergence of the Army Air Corps (AAC) as a separate air arm in the late 1950s did not settle the issue, and today, battlefield helicopters are operated by both Services. With an increasing emphasis on joint operations and efficient support structures in recent times, this arrangement might appear anachronistic.

This chapter traces the employment of battlefield helicopters in the UK to explain how the present command and control arrangements evolved. A chronological approach is taken in exploring this theme since the outcomes are best understood in their historical context. Many of the issues concerning the command and control of helicopters have their roots in the earliest days of aviation when new organisations were established to exploit the emerging technology: namely, air forces. Consequently, these early arrangements are first examined to set the scene for the appearance of helicopters in World War II. Different opinions over the place of helicopters on the future battlefield led to inter-Service tensions during the post-War period, and these issues are briefly explored before looking at the early employment of helicopters in the counter-insurgency operations. Factors leading to the formation of the Army's own air arm are then highlighted, followed by an examination of the different approaches adopted by Army and RAF for the command and control of helicopters through the 1960s. This was also a period in which helicopters gained wider acceptance as useful military machines, bringing the dispute between the Services into sharper focus. Further developments through the 1970s and 1980s are then traced, including an overview of operations in Northern Ireland and the Falkland Islands. Following a brief study of the employment of British helicopters during the 1991 Gulf War, more recent developments are reviewed.

¹ General Sir Anthony Farrar-Hockley, *The Army in the Air: The History of the Army Air Corps*, Alan Sutton Publishing, Stroud, Gloucestershire, 1994, p. 44.

EARLY DEVELOPMENTS

Inter-Service Relations

The first organisation with responsibility for the operation of aircraft in the British armed forces was the Royal Flying Corps (RFC) which was established in 1912 and comprised naval and military wings, funded jointly by the Admiralty and War Office. A single Royal Aircraft Factory and a joint Central Flying School were also established, providing unity in the organisation of military aviation. However, the activities of the naval and military wings of the RFC began to grow apart, and by the outbreak of World War I, the naval wing had changed its title to the Royal Naval Air Service (RNAS). The RFC and RNAS then developed independently, with each establishing its own organisation and supply arrangements. With a scarcity of resources during the war, this arrangement led to unhealthy competition between the Services for aircraft, engines and equipment, engendering a culture of antagonism.¹

There were a number of attempts to coordinate the activities of the two Services through the establishment of coordinating bodies, but these bodies lacked authority and the Admiralty and War Office largely ignored their recommendations. The competing requirements for supply were eventually resolved by the establishment of the Aeronautical Department of the Ministry of Munitions in November 1916, but policy differences were not tackled until the formation of an air ministry in 1917. Full integration was not achieved until the RAF was formed in 1918, bringing together the air arms of both Services, and providing a new force capable of independent air operations. In addition to its independent operations of long-range bombing and air defence, the RAF was responsible for providing aerial services to the Royal Navy (RN) and Army, establishing the Fleet Air Arm (FAA) and Army Cooperation (AC) squadrons. However, there was considerable opposition to the formation of the RAF, not least from the Admiralty.

After the war, the Admiralty sought to regain ownership of the FAA, and in 1937 won its case in parliament, but the RAF remained responsible for providing air support to the Army. By that time, the RAF had become wedded to the doctrine of strategic bombing, which, it was argued, was capable of winning wars without significant intervention by sea and land forces.² Consequently, the RAF devoted most of its available funds to long-range bombers and fighters for air defence, with only limited provision for Army support functions. The Army meanwhile had little regard for air power, concentrating instead on the development of traditional war fighting techniques. However, the devastating effects of German Ju 87 'Stukas' in the Spanish Civil War finally convinced many in the Army of the vital importance of air power to its own operations. The Army saw the integration of the Luftwaffe in direct support of ground forces as an important factor, but the RAF came to a different conclusion, with the Chief of the Air Staff describing the use of aircraft in this role as 'a gross misuse of air forces'.³

¹ See comments by Austin Chamberlain (former Chancellor of the Exchequer and Member of the War Cabinet) quoted in Hilary St. George Saunders, *Per Ardua: The Rise of British Air Power 1911 -1939*, Oxford University Press, London, 1934, p. 307.

² For a critical appraisal of the RAF's doctrine of the period, see A.J.P. Taylor, *English History 1914-1945*, Oxford University Press, London, 1965, especially p. 391.

³ Quoted in Farrar-Hockley, *The Army in the Air*, p. 44.

Despite its strategic orientation, however, the RAF did maintain a number of army cooperation squadrons, providing reconnaissance, photography and artillery observation. However, some in the Army were less than satisfied with the service provided by the RAF and saw a requirement for their own officers to fly the aircraft.¹ The Air Council, a committee of senior air force officers, civil servants and government ministers that administered the RAF, agreed to review 'any unsatisfactory features of the system of cooperation at present in use'.² Accordingly, in 1938 trials of the Flying Observation Post (Flying OP) were set up using various light aircraft. The aircraft were flown by Royal Artillery pilots, who were seconded to the RAF for training and then attached to artillery units in the field for the trials. Although the results were encouraging for the Army, the RAF doubted the viability of light aircraft to operate in the face of enemy anti-aircraft fire. Nevertheless, after the outbreak of World War II, the Army continued to press for specialised aircraft to improve artillery spotting and despite reservations, the RAF eventually agreed to establish Air Observation Post (Air OP) squadrons. The Air OPs were operated wholly in support of the Army, but remained part of the RAF, using RAF procedures and supported by RAF technicians; however, the aircraft were flown by Army pilots. During the war, Air OPs made a significant contribution to Army operations, providing direction of fire for artillery, local reconnaissance and, as far as possible, a much sought after aerial 'taxi-service' for senior officers.

Meanwhile, with Britain fighting a rearguard action against Germany during 1940, Churchill was keen to develop a means of taking the fight to the enemy. This led to the creation of an airborne force capable of air landing troops on the continent of Europe, despite misgivings about the concept from both the Army and the RAF.³ With insufficient aircraft available to equip and train a parachute force, it was decided to use gliders to air land the troops. There was then a discussion about which Service should provide the glider pilots. The War Office argued that glider pilots also needed to operate as soldiers once they had landed, but the Air Ministry pointed to the 'higher efficiency' of RAF glider pilots, maintaining that 'the primary role of the glider pilot was to fly and his participation in the land battle was unnecessary'.⁴ The War Office view prevailed and the Army formed a Glider Pilot Regiment, which later merged with the Parachute Regiment to form the Army Air Corps. Due to shortages of Army pilots, however, a number of RAF pilots were seconded to glider units where they were given training in weapon handling, fieldcraft and other soldiering skills. This proved to be fortuitous during later operations when glider pilots did actually become involved in fighting on the ground.⁵

Helicopters Enter the Fray

Early British experiments with helicopters proved unsuccessful and in the 1930s, British interest in rotary winged aircraft was focused on autogyros, which appeared to show more promise. Autogyros were later used for Air OP duties with the Expeditionary Force in France, and subsequently by the RAF for radar calibration

¹ *Ibid.*, p. 46.

² *Ibid.*, p. 46.

³ *Ibid.*, p. 58.

⁴ Minutes of an Air Council meeting 31 August 1944, quoted in *Ibid.*, p. 127.

⁵ *Ibid.*, pp. 130-134.

work around the British coast.¹ Meanwhile, the British Aircraft Delegation in Washington, which was part of the British Defence Liaison Staff, carefully followed helicopter developments in the United States, keeping both the Admiralty and the Air Ministry informed. Following the successful development of Sikorsky's machines, interest in autogyros waned. Initially, the Royal Navy showed greatest interest in helicopters, which offered a new way to deal with the submarine threat and in 1942 ordered 14 Sikorsky R-4 and 250 R-5 helicopters to be used for convoy escort, anti-submarine warfare and sea rescue.² However, by late 1943 the submarine threat in the Atlantic had receded and the Royal Navy decided to cancel its order for R-5s. In the absence of any specified tasks for the helicopter, and with other more urgent priorities to meet, the RAF could not be persuaded to take up the cancelled Royal Navy order.³ Nonetheless, both the RAF and Royal Navy proceeded with orders for a few R-4 and R-6s (named Hoverfly in RAF service and Gadfly in Royal Navy service), and a number of RAF and Royal Navy pilots were sent to the United States for helicopter training. In 1944 the RAF formed a helicopter training school at RAF Andover to teach Air OP pilots to fly helicopters.⁴ The school was equipped with nine R-4s and nearly 100 Army pilots were trained to fly helicopters during the war, even though the Army did not have any in operational service at that time.⁵ Meanwhile, the Royal Navy established a separate helicopter school at Royal Naval Air Station Portland. British helicopters arrived too late in the war to be used on the battlefield, but the use of United States Army Air Force Air Commando R-4s in support of British forces operating in Burma gave an insight into their potential. The Air Commandos operated in support of the long-range patrol groups established by General Ord Wingate to operate behind Japanese lines, and although they used mainly fixed-wing aircraft, helicopters were occasionally also employed on operations.⁶ Commenting on the work of the Air Commandos, the Commander-in-Chief South-East Asian Command, Admiral Mountbatten, wrote to the Chief of the Air Staff, Sir Charles Portal, stating:

The fly-in of Wingate's Forces was a great success and will revolutionise jungle warfare for the future ... I do hope and pray that you will form at least one British Air Commando ... [after Overlord] ... if only for reasons of national prestige.⁷

¹ Wing Commander Jack Dowling, RAF, *RAF Helicopters: The First Twenty Years*, Her Majesty's Stationery Office, London, 1992, p. 4.

² The Sikorsky R-4 was a production of the VS-316 helicopter developed by Dr Igor Sikorsky under contract to the US Army Air Force, which was further developed into the R-5 and R-6. Quantities ordered detailed in Admiralty File ADM1/17033, loose minute, First Sea Lord to Prime Minister, 16 March 1943, quoted in Guy Sadler, *The Helicopter and the Struggle for its Control Between the War Office and the Air Ministry 1944-1959*, unpublished PhD thesis for University of Wales, p. 31.

³ Dowling, *RAF Helicopters*, p. 5.

⁴ Richard E. Gardner and Reginald Longstaff, *British Service Helicopters*, Robert Hale, London, 1985, p. 9.

⁵ *Ibid.*, p. 10.

⁶ Joint Intelligence Collection Agency Report, 4 September 1944, quoted in Sadler, *The Helicopter and the Struggle for its Control*, p. 31.

⁷ Air Ministry File Air 8/1158, loose minute, Commander-in-Chief South-East Asian Command to Chief of the Air Staff, 28 March 1944, quoted in *Ibid.*, p. 31.

POST-WAR YEARS

Shaping the Services

At the end of World War II, Britain faced severe economic difficulties, and there was immediate pressure to reduce expenditure on the armed forces. However, the war also left Britain with a legacy of commitments throughout the world that required it to maintain large numbers of troops overseas. With reducing budgets and continuing commitments, both the Army and the RAF faced severe financial pressure. During the war, the Army and the RAF had developed a close working relationship, perhaps reaching its apogee in the Western Desert campaigns of 1942 and early 1943. However, as the nuclear bomb heralded a new era at the end of World War II, the RAF's focus shifted back to its strategic mission, with an emphasis on meeting bomber and fighter requirements.¹ Once again, this left many in the Army concerned that the RAF would not provide adequate resources to meet its requirements for air support, rekindling demands for the Army to develop its own air arm.

There were also concerns over the command and control arrangements for the Air OPs, which remained scattered across several overseas theatres. Artillery staff continued to coordinate their operational employment, whilst the RAF continued to provide technical support, but there was no central headquarters organisation to develop tactics, coordinate requirements, or provide staff advice to senior commanders. The solution, many Army officers believed, was for Air OP squadrons to operate entirely within the Army command structure.² The Chief of the Imperial General Staff, Field Marshal Lord Alanbrooke, wrote to the Chief of the Air Staff, Sir Charles Portal, in October 1945 stating:

Now that we are in the process of formulating the shape of the post-war Army, this seems to be the appropriate time to consider whether in future, the Army should assume the responsibility for manning and operating its own aircraft for certain specific Army functions.³

In reply, the Chief of the Air Staff stated:

There are arguments in favour of aircraft that can only be of use to the Army coming under Army control, subject to operational advice from the Air Force Commander, but to divide the control of aircraft and pilots that have uses common to both Services would militate against flexibility and economy. If division of control were followed by division of responsibility for maintenance and training, there would be further loss of economy.⁴

¹ For an insight into air/land operations in the North African campaigns of World War II, see Vincent Orange, *Coningham: A Biography of Air Marshal Sir Arthur Coningham, KCB, KBE, SO, MC, DFC, AFC*, Methuen, London, 1990, especially pp. 77-156.

² Farrar-Hockley, *The Army in the Air*, p. 166.

³ Air Ministry file Air 8/985, letter, Chief of the Imperial General Staff to Chief of Air Staff, 15 October 1945, quoted in Sadler, *The Helicopter and the Struggle for its Control*, p. 65.

⁴ *Ibid.*

The RAF seemed to accept that, in principle at least, there was a case for the Army to operate aircraft that had no applications beyond Army support; however, in practice, it resisted attempts to divide control of air power. In a typical inter-Service compromise, it was agreed to allow the Air OP squadrons to continue under existing arrangements, but the disagreement did not go away and was to resurface many times in the ensuing decades.

Helicopter Requirements

Immediately after the War, the Army sought to identify suitable tasks for helicopters, conducting trials using a small number of Hoverflys. However, the RAF, which had primacy in aircraft developments, did not have an identifiable single-Service role for the helicopter and saw little value in these machines.¹ Consequently, in the face of other pressing air power needs, the development of helicopters for use in land warfare was not pursued with vigour. Meanwhile, the Royal Navy continued to develop its requirements for anti-submarine and sea-rescue helicopters, and consequently led the way for the development of helicopters in Britain.²

By the late 1940s, the venerable Auster light aircraft, in service with Air OP squadrons, were in need of replacement and a joint War Office and Air Ministry committee was established to identify the roles which light Army aircraft could fulfil. The committee concluded that these roles would be air observation, local reconnaissance, evacuation of casualties from forward areas, intercommunications by commanders and staffs, and an air dispatch letter service. The Army considered that Hoverfly helicopters might be suitable for some of these roles, and passed its requirements to the Air Ministry, which had the task of preparing a formal operation requirement. The Army was also considering using large cargo helicopters in place of part of its ground transport fleet to provide greater mobility on the nuclear battlefield; however, under arrangements extant at the time, these aircraft would also have to have been provided by the RAF.³ However, the Air Ministry considered that the cost of helicopters could not be justified, especially given their vulnerability and meagre performance capabilities at the time.⁴ Underlying this difference of opinion was probably a more fundamental disagreement over the value of land forces in modern warfare, with the RAF convinced that strategic air power reduced the relevance of land forces, especially large-scale conflict between the super-powers. However, the failure of the RAF to meet the Army's demands for aircraft added to pressure from within the Army to form its own air services. In 1953, the Director of Land/Air Warfare, Major-General Thompson, proposed that the Army take full responsibility for its own aircraft, asserting that:

Owing to the present system, we are failing, increasingly, to make proper military use of helicopters, already assessed at their proper value by Navy, civil operators and American Services. The helicopter would probably be of greater value to the Army than any other Service or organisation.⁵

¹ Dowling, *RAF Helicopters*, p. 102.

² *Ibid.*, p. 19.

³ War Office file 32/13064, paper on 'The Load-Carrying Helicopter', Directorate of Land/Air Warfare, 21 April 1948, quoted in Sadler, *The Helicopter and the Struggle for its Control*, p. 100.

⁴ *Ibid.*, p. 343.

⁵ Major-General G.S. Thompson to Chief of the Imperial General Staff, 6 August 1953, quoted in Farrar-Hockley, *The Army in the Air*, p. 174.

The RAF, however, saw such a development as a threat to its existence. Shortly after the end of the War, the RAF had been concerned that if the Army gained control of even a few aircraft, it might prove to be the 'thin end of the wedge', and lead to the RAF's functions being whittled away.¹ However, by the 1950s, the RAF had begun to concede that there might be a case for the Army to operate some of its own aircraft in a few limited roles. In 1954, the Chief of the Air Staff, Marshal of the Royal Air Force Sir John Slessor, stated:

... it was wrong to forbid the Army to buy domestic transport aircraft and make them rely on the good will of the Air Council. At present, the Army has too few aircraft because air funds have to be spent on projects of greater importance to air defence. That was hardly logical, since the need for Army aircraft should be considered against the background of the Army's transport problem and the need for mobility in the field, not as part of war in the air.²

Despite this concession, however, it was to be several years before the Army acquired its own air arm. Meanwhile, events in the real world were beginning to overtake policy.

THE 1950s: CONFLICT AND DIVISION

The Malayan Emergency

Whilst the wrangling over the control of air services for the Army was taking place in Whitehall, events in the British colony of Malaya demanded urgent action. Plans to return the colony to local control were being hindered by a communist insurgency and British and Commonwealth forces were deployed to stabilise the situation. Army operations against insurgents in the remote jungle regions were being jeopardised because of the need to carry wounded soldiers over long distances through the jungle, and it was considered that helicopters might improve casualty evacuation.³ The task fell to the RAF, which formed a Far East Air Force Casualty Evacuation Flight, but lacking any suitable helicopters, it had to turn to the Admiralty for help. The Royal Navy had just taken delivery of its first Dragonfly helicopters (modified Sikorsky S-51 built by the Westland Aircraft Company in England), and three of these aircraft were diverted for use by the RAF. Once the helicopters arrived in Malaya, they were an instant success, rescuing many wounded soldiers.⁴

Helicopters were very much in their infancy at the time, and because of the need to provide extensive technical support for the Dragonflies, it was considered necessary to operate them from a well-found base. Consequently, the Casualty Evacuation Flight was established at RAF Changi in Singapore, even though this was some way from the main area of operations. The helicopters were under the command of headquarters Far East Air Force, also at Changi, but they were placed under the

¹ Air Ministry file 8/985, memo from Air Member for Supply Organisation on 'Proposed transfer of certain air responsibilities to the Army', 26 October 1945, quoted in Sadler, *The Helicopter and the Struggle for its Control*, p. 78.

² Minutes of an Air Council meeting to discuss 'Responsibility for Flying Units Designated to Meet the Needs of the Army', held on 6 May 1954, quoted in *Ibid.*, p. 175.

³ RAF Air Publication (AP) 3410, *The Malayan Emergency 1948-1960*, Ministry of Defence, 1970.

⁴ Dowling, *RAF Helicopters*, p. 44.

Operational Control of Air Headquarters (AHQ) Malaya, which established an advanced headquarters in Kuala Lumpur, alongside the Army headquarters responsible for directing all military operations in Malaya. However, whilst in Singapore, the helicopters were under the control of the main AHQ in Changi until they crossed the Johore Straits into Malaya, when control was passed to the advanced AHQ. This resulted in a lengthy tasking chain. Individual Army units requiring helicopter support submitted bids to the Army headquarters in Kuala Lumpur, where they were relayed to the advanced AHQ, to be relayed back to main AHQ in Singapore, which in turn tasked the Casualty Evacuation Flight. The process inevitably caused delays, and some essential task details were not always provided to the helicopter pilots; nonetheless, with so few helicopters in theatre, some form of centralised control was essential to ensure their efficient use. In contrast, Air OPs, which still operated Austers, were deployed forward with Army units throughout Malaya and were therefore much more responsive. To mitigate some of the tasking delays, the Casualty Evacuation Flight exploited an informal communications link with the Air OP units, which were able to provide much of the information they needed faster than the formal system.¹

The ability of the helicopter to take-off and land vertically made it indispensable in the jungle environment. However, the Dragonfly's performance was severely limited in the hot temperatures and high altitudes experienced in Malaya, and on occasions it was capable of lifting only one passenger at a time.² Nonetheless, they proved to be highly successful in the casualty evacuation role where speed could save soldier's lives, and the potential to use helicopters in other roles, such as tactical troop insertions and communication tasks, was soon recognised. This led to demands for additional helicopters to be deployed, but, due to delays in development and production of helicopters in the UK, expansion of the helicopter force was slow. To some extent this slow development could be attributed to a lack of foresight on the part of the Air Ministry, which had been reluctant to pursue the Army's requirements for helicopters in the post-war years; however, a shortage of funds and limited manufacturing capacity were also responsible.

The RAF's replacement for the war-vintage Hoverfly, the Bristol Sycamore, was not ready for operational use, and the RAF was also unable to meet demands for troop transport helicopters in Malaya. Consequently, the RAF sought the release of additional Royal Navy Dragonflies for the increased casualty evacuation task and a solution to the troop-lift requirement. After much wrangling between the Air Ministry and Admiralty, which further delayed the deployment of additional helicopters, the Royal Navy agreed to loan the Dragonflies to the RAF. It also deployed a squadron of American built Sikorsky S-55s for the troop transport task, but these aircraft were operated by Royal Navy crews.³ With more helicopters in theatre it became feasible to deploy a detachment of Dragonflies and S-55s to Kuala Lumpur to improve support to operations in the north and central Malaya.⁴ The Royal Navy S-55 helicopters utilised the same tasking arrangements as the RAF helicopters, and soon became involved in

¹ *Ibid.*, p. 33.

² Increasing temperature and the reduction of pressure associated with higher altitude both contribute to increasing the density altitude of the atmosphere, which has an adverse effect on helicopter performance.

³ The S-55 had been acquired from the US for the NATO anti-submarine warfare role and because of legal complexities associated with the deal, it was considered necessary for Royal Navy crews to continue to operate these aircraft. *Ibid.*, p. 53.

⁴ AP 3410, p. 103.

tactical troop moves as well as casualty evacuation and communication tasks, establishing an excellent reputation with the troops they supported.

The Dragonfly was eventually replaced by the Sycamore, which had superior performance and handling characteristics. However, the RAF's replacement for the Royal Navy S-55s, the Westland Whirlwind, fared less well. The Whirlwind, a British version of the S-55, was a heavier copy of the original (having been built to British military specifications) and its performance was severely limited in the Malayan conditions.¹ The Whirlwinds were deployed to Kuala Lumpur but, because of their poor performance, it was necessary to retain the Royal Navy S-55s for longer than originally planned. The performance of the Whirlwind was noted by the Air Officer Commanding Malaya, Air Vice-Marshal Scherger (an Australian officer), who wrote to the Director of Operational Requirements (Air) stating 'your wretched Whirlwind is a complete washout'.² The RAF Whirlwinds could not lift as much as the Royal Navy S-55s but, because the two helicopters looked similar, it would not be surprising if troops on the ground attributed the difference in performance to the parent Service. With little evidence to contradict such perceptions (since helicopter support was so thinly spread), the view that the Royal Navy provided superior helicopter support to the RAF became accepted into Army mythology. Such perceptions, perhaps borne of incomplete understanding, later had an important influence on senior decision-makers in the Army. While this may be little more than conjecture, it may help explain the depth of antipathy felt towards RAF helicopter operations by some members of the Army.

Nevertheless, despite their limited performance, helicopters proved to be 'essential to success in the Malayan Emergency' and, by the end of the campaign, there was a far wider acceptance of their military value.³ In 1959, the Vice Chief of the Air Staff told an Air Council meeting that:

Experience over the last few years has shown conclusively that the conduct of policing, cold war, and limited war operations involves the inevitable and genuine requirement for helicopters.⁴

Joint Experimental Helicopter Unit and Suez

The Army continued to feel frustration at the Air Ministry's lack of progress in acquiring battlefield helicopters, and in 1954 sought to gain control of helicopters from the RAF. Eventually, the Air Ministry agreed to transfer control of Air OP units and light liaison aircraft to the Army, but resisted moves to a greater division of air power. In response to the Army's demands for larger helicopters, the Joint Chiefs of Staff agreed to establish a Joint Helicopter Evaluation Unit (later renamed Joint Experimental Helicopter Unit (JEHU)), to investigate the extent to which helicopters could meet the Army's requirements for mobility. The unit, which was equipped with Bristol Sycamores and Whirlwinds, came under Army control, but the RAF provided technical support and many of the pilots.⁵

¹ Dowling, *RAF Helicopters*, p. 101.

² *Ibid.*, p. 77.

³ The Director of Operations, General Sir Gerald Templer, quoted in Dowling, *RAF Helicopters*, p. 77.

⁴ Air Ministry files, Air2/12709, Note by Vice Chief of Air Staff for Air Council (59) 21, 12 February 1959, quoted in Sadler, *The Helicopter and the Struggle for its Control*, p. 65.

⁵ Dowling, *RAF Helicopters*, p. 113

The 'Experimental' tag was dropped from the unit's title when it was embarked on the light fleet carrier ship HMS *Ocean*, and deployed to the Middle East as part of Britain's response to the emerging crisis over ownership of the Suez canal in 1956. Together with Royal Navy S-55s, helicopters from the Joint Helicopter Unit transported Royal Marine Commandos in an assault on Port Said in Egypt. Although the wider Suez campaign turned out to be a political fiasco, the Port Said assault was a tactical success and proved to be an important milestone in the establishment of a permanent helicopter-borne amphibious assault force of Royal Navy helicopters and Royal Marines.¹ After Suez, the JEHU returned to its task of developing air mobility requirements for the Army; its helicopters were also used briefly to support counter-terrorist operations in Cyprus in the late 1950s.²

The Army's Own Air Force

Following the Suez Crisis there was increasing pressure on the Defence budget and all three Services were forced to make economies. Facing continuing demands from the Army for more helicopters, the RAF eventually decided it was better to transfer full responsibility for light aircraft and utility helicopters to the Army, enabling the RAF to concentrate on its 'core' responsibilities. However, to prevent the Army encroaching on its core air power business, the RAF proposed that the Army be allowed to operate unarmed aircraft and subject to an all-up-weight limit of 4,000 pounds.³ In accepting these criteria, the Army Council believed that it might be able to alter the limitations through negotiation at a later date, and that, in any case, it did not wish to expand Army aviation too quickly and outstrip its resources. Agreement was reached, and the Army Air Corps (AAC) was formed on 1 September 1957, taking responsibility for purchasing, manning, maintaining and operating its own light aircraft and utility helicopters.⁴ Within the War Office, responsibility for Army Aviation fell to the Directorate of Land/Air Warfare.

Short Range Transport Force

The work of the JEHU continued until 1959, by which time its Sycamores had been replaced by Whirlwinds. In Army service, the Whirlwind was regarded as a 'utility' helicopter, so when the JEHU was disbanded, the AAC expected to gain control of these helicopters. However, they exceeded the 4,000 lb weight limit for Army aircraft and so were transferred to the RAF, thus establishing a split in ownership of battlefield helicopters between the Army and RAF. In RAF service, the Whirlwind was considered to be part of the wider air transport force, and became the helicopter element of the Short Range Transport (SRT) force within No. 38 Group.⁵

With the RAF's main focus on fighter and bomber missions, the SRT force was somewhat of a backwater, with many of the pilots and ground crew assigned to helicopters only on short tours between 'mainstream' flying postings. Moreover, a

¹ Everett-Heath, *Helicopters in Combat*, p. 27.

² Dowling, *RAF Helicopters*, pp. 165-167.

³ All up weight is the total of the weight of the aircraft, its fuel load, crew and payload. The same weight limit was imposed on US Army Aviation aircraft in the National Security Act of 1947 that created the United States Air Force, and it may have been for this reason that this seemingly arbitrary weight was selected.

⁴ Technically, it was re-formed, since Army Air Corps was the title given to the unit formed by the amalgamation of the Glider Pilot Regiment with the Parachute Regiment in World War II.

⁵ Dowling, *RAF Helicopters*, p. 114.

large proportion of the helicopter pilots in the SRT force had a background in flying fixed-wing transport aircraft, which may explain why some members of the Army gained the impression that 'the RAF operated its helicopters like airliners'.¹ Certainly, it seems likely that the RAF culture of risk avoidance, so important in fixed-wing transport operations, would have permeated to the SRT force. It was sometimes necessary to operate RAF helicopters from field locations when operating in support of the Army. This would have been an alien environment to some in the RAF, accustomed to operating from well-found bases and unfamiliar with the requirements of field conditions. This created an impression in the Army that the RAF lacked the necessary knowledge to work with the Army in the field, and that by the time they 'began to think like soldiers', their time with helicopters had expired.²

Centralisation and Integration

In accordance with RAF doctrine, command and control of the SRT helicopters was normally vested in an RAF headquarters, which was often located some distance away from the scene of operations. The doctrine held that only an authority experienced in the application of air power, which was sited and staffed to get a reasonably broad picture of actual and potential requirements, could employ tactical aircraft efficiently. However, there were shortcomings in the rigid application of this doctrine to helicopter operations, where the speed of response could not always be achieved through a long tasking chain. Some RAF commanders acknowledged these shortcomings and recognised that control of helicopters should not be vested at too high a level.³ To balance the need for responsiveness with the benefits of centralised control, RAF policy for the employment of its helicopters was that they could be placed under operational control of supported brigades for a specified time and for a specified operation, but the Air Headquarters would retain the ability to withdraw the helicopters as it saw fit.⁴ Application of this policy demanded a high level of liaison between the supported Army unit and the RAF command, but subsequent events suggest that this requirement may not always have been met.

In contrast to the RAF, the AAC sought to disperse its aircraft by 'integrating' army aviation with field units of the Army. However, this was not solely to improve their operational effectiveness. After its formation, the AAC was faced with considerable manning difficulties, having assumed responsibility for a wide range of support activities virtually overnight and integration was seen as a means of overcoming the manning shortages. It was assumed that field regiments would be more willing to make manpower available to aviation if the aircraft were allocated under their control and the personnel remained under their command. It also meant that the supported unit would be responsible for administering the personnel in all matters such as rations, pay and accommodation. Local control facilitated rapid response, with obvious operational advantages, but integration demanded a large number of helicopters and widely dispersed logistic support. Taken to its logical

¹ Army officer quoted in Phillip Anthony Towle, *Pilots and Rebels: The Use of Aircraft in Unconventional Warfare 1918-1988*, Brassey's, London, 1989, p. 142.

² Peter Mead, *Soldier In the Air*, Ian Allen, London, 1967, p. 209.

³ Air Vice-Marshal C.N. Foxely Norris, 'Air Aspects of Operations against Confrontation', *Brassey's Annual*, 1967; Colonel S.M.W. Hickey, *The British Army and the Battlefield Aerial Vehicle: The Evolution of Current Doctrine and Examination of Future Trends*, Unpublished thesis, King's College, University of London. 1973/4, p. 124.

⁴ Hickey, *The British Army and the Battlefield Aerial Vehicle: The Evolution of Current Doctrine and Examination of Future Trends*, p. 122.

conclusion, full integration would have made the AAC unnecessary, as all aspects of parenting the aircraft and personnel would fall to the individual field regiments. However, without a central air organisation, aviation experience in the Army would be diluted and there would be no centre of excellence to take forward innovative ideas and techniques in the application of aviation. Consequently, while the aircraft were dispersed to various Army field units and manned mainly from the other corps, it was decided to retain a cadre of AAC pilots; nonetheless, the AAC became just one part of the broader Army Aviation.

Meanwhile, as the RAF and AAC followed separate paths for command and control, there was a need to upgrade the fleets of increasingly obsolescent helicopters; the two Services also faced continuing demands for helicopters to meet operational commitments around the world.

New Helicopters

In the same year that the AAC was formed, a government report into the role of air transport in support of the Army (known as the Bingly Report) established that the RAF was responsible for meeting the Army's tactical transport and cargo lift requirements in forward areas. To meet these responsibilities, the RAF set about acquiring replacement helicopters for the SRT force, as well as new helicopters to meet the cargo requirements. The latter were to form part of the Light Cargo Force (later known as Medium Range Transport), which also included fixed-wing cargo aircraft. Later however, the distinction between the SRT helicopters and light cargo helicopters faded and collectively they became known as Support Helicopters (SH). The Whirlwind Mk 10 and Westland Wessex (licence-built Sikorsky S-58) were selected to replace the Sycamore and earlier marks of Whirlwind in the tactical transport role, while the large, tandem-rotor Bristol Belvedere was selected to meet the requirement for cargo helicopters. These aircraft were the products of British manufacturers and were selected more for political and industrial reasons than for operational requirement. Moreover, they all suffered technical problems in their development, thus delaying their introduction to service.¹

Meanwhile, it was planned to increase the size of the AAC fleet to meet the requirements of the AAC 'integration scheme'. The ultra-light Saunders-Roe Skeeter already in service was unsuitable for all the tasks envisaged.² The planned replacement for the Skeeter was the Saunders-Roe Scout (similar to the Navy Wasp), but this helicopter breached the previously agreed 4,000 pound all-up-weight limit. However, because it was only intended to use it as a liaison helicopter, and the only alternative meant buying offshore, the Air Ministry did not object to its introduction to the AAC.³ In effect, this move tacitly abolished the weight criteria. Nevertheless, the Scout was considered too expensive and too complicated to meet all the Army's requirements so a second type was required.⁴ The selected type was the Augusta Sioux, a licence-built Bell-47, which was in turn licence-built by Westland; however, because the Sioux would not be available for several years, the Army acquired a number of French built Sud-Aviation Alouettes as a stop-gap.

¹ Dowling, *RAF Helicopters*, p. 231.

² The Skeeter lacked the power for operations in tropical climates, Farrar-Hockley, *The Army in the Air*, p. 193.

³ *Ibid.*, p. 192.

⁴ Gardner and Longstaff, *British Service Helicopters*, p. 115.

In line with 'integration', Scouts were deployed under full command to brigades and battalions, usually in 'air troops' or 'air platoons' of four or five aircraft, while the lighter Sioux were detached in similar numbers to infantry battalions and artillery regiments.¹ The helicopters were maintained by detachments of the Army's Royal Electrical and Mechanical Engineers (REME), which also provided second-line aircraft workshops. Although AAC squadrons were established at divisional level, the squadron commander did not have full command responsibility for the subordinate air troops or air platoons, since they belonged to their own regiments and battalions. In practice, this arrangement left the squadron commander with little authority and consequently it was not a popular command post.² In Germany, wing headquarters were established at corps and army group level to provide staff advice to the commander and provide some supervision over the dispersed air units, but there were no equivalent organisations in other theatres.

Despite the appeal of the integration scheme to the Army at large, there were misgivings about it within the AAC; indeed, some AAC officers suspected that the scheme had been conceived merely to defeat possible takeovers by the RAF.³ Concern centred on the lack of supervision of the dispersed units and the additional logistic support costs. Certainly, integration would have made it much more difficult for the RAF to simply take over the AAC, but it not clear whether this was a significant factor behind the Directorate of Land/Air Warfare adopting the scheme.

THE 1960s: COUNTER-INSURGENCY AND DEFENCE REFORMS

No sooner had the RAF and Army introduced their new types than they were pressed into operational service around the world. In the early 1960s, a number of territorial disputes flared up in former British colonies and protectorates, and the British Government was asked to intervene. Several disputes, including those in Kuwait in 1960, Brunei in 1962 and East Africa in 1964, were quelled relatively expeditiously using Royal Marines, who were rapidly deployed by helicopter from Royal Navy ships. The availability of helicopters embarked with the Royal Marines was critical to their rapid deployment, although in the case of Brunei and Kenya, RAF helicopters also took part in the operation.⁴ RAF helicopters were also used in anti-terrorist operations in Cyprus prompting the governor, Field Marshal Sir John Harding, to comment that they had 'contributed more to fighting terrorism on the Island than any other single unit'.⁵ On the other hand, General Sir Anthony Farrar-Hockley considered that the RAF helicopters were 'flown by skilled pilots who were absolutely ignorant of ground requirements'.⁶ These comments illustrate the widely differing perceptions that so often emerged among those involved in operations. In addition to these episodes, helicopters played a major part in counter-insurgency operations in two other campaigns: Borneo and Aden. These operations provide useful case studies in the differing approaches to command and control adopted by the Army and RAF during the period.

¹ Everett-Heath, *Helicopters in Combat*, p. 27.

² Hickey, *The British Army and the Battlefield Aerial Vehicle*, p. 83.

³ *Ibid.*, p. 83.

⁴ David W. Wragg, *Helicopters at War*, Robert Hale, London, 1983, pp. 93-94 and 113.

⁵ *Ibid.*, p. 112.

⁶ Farrar-Hockley, *The Army in the Air*, p. 186.

Borneo

The incorporation of the British Borneo territories of Sabah and Sarawak into the Federation of Malaysia led Indonesian President Sukarno to declare a policy of 'confrontation' in 1963. Shortly afterwards, acts of terrorism and sabotage broke out in the region. Later, Indonesian troops began making raids into the territories at various points along the 1,000 mile-long frontier. Australian and New Zealand troops assisted British and Malaysian forces in countering the insurgency. The dense jungle, mountainous terrain and vast distances made land movement extremely difficult and the effectiveness of the force was directly proportional to the amount of helicopter support it received. The Director of Operations, Major-General Walter Walker proclaimed: 'Give me a hundred men and some helicopters and they will do the job of a thousand'.¹ Helicopter tasks included logistic resupply to bases in the border areas, insertion and extraction of infantry patrols, troop movement, artillery spotting, and casualty evacuation. RAF Belvederes and Sycamores that had been deployed to Brunei were joined by Whirlwinds, some of which were deployed from bases in Singapore, while others were detached from the UK. Additionally, Royal Navy Whirlwinds and Wessex added to the lift capacity, while AAC Scouts later joined the Sioux. A number of helicopters, including Royal Navy Wessex and RAF Whirlwinds were fitted with side firing machine guns and SS-11 missiles.² Although ostensibly for self-protection, these weapons also provided a limited offensive capability.

With helicopters detached from a wide number of units, command and control arrangements were complex, and in the initial stages of the campaign, the Army complained that control of RAF helicopters was held at too high a level for the situation.³ Royal Navy helicopters also supported Army operations in Borneo, initially operating from HMS *Albion*; however, they later disembarked to deploy forward in direct support of the Army brigades. The vast distances to be covered in the theatre soon showed the advantages of forward deployment, and the RAF helicopters soon followed suit. Not only did forward deployment reduce transit times but, by working and living together on a daily basis, the RAF pilots gained a better understanding of the ground commander's requirements; in turn, the ground commanders came to better understand the requirements of the RAF pilots.⁴ Army aircraft were often deployed further forward, sometimes at unit level. However, the dispersed AAC flights, which usually depended on the brigade signal squadron for their administration, found it difficult to maintain their outlying detachments. For example, requests for aircraft spares for AAC helicopters received no higher priority through the Army supply system than other routine Army supplies; clearly, decentralisation had its limits.⁵

Aden

Whilst the British were facing 'confrontation' in Borneo, the security situation was also deteriorating in the British protectorate of Aden. Local tribesmen, supported by

¹ Everett-Heath, *Helicopters in Combat*, p. 27.

² Dowling, *RAF Helicopters*, p. 408. SS-11 was a French designed surface-to-surface wire guided anti-tank missile, first adapted for use on helicopters by the French Army air corps (ALAT) in Algeria in the 1950s. Everett-Heath, *Helicopters in Combat*, p. 53.

³ See Towle, *Pilots and Rebels*, p. 142.

⁴ Dowling, *RAF Helicopters*, p. 324; and Everett-Heath, *Helicopters in Combat*, p. 28.

⁵ Hickey, *The British Army and the Battlefield Aerial Vehicle*, p. 126.

the neighbouring Yemen Arab Republic, mounted guerrilla actions from the Radfan Mountains behind the port of Aden, threatening the stability of the Protectorate. Consequently, the British Government deployed troops to assist the local Federal Regular Army establish control. In contrast to the dense jungles of Borneo, the terrain in Aden was barren, but equally mountainous and hot.

There were soon calls for helicopters to support the ground operations, but with commitments elsewhere, only limited numbers were available. Royal Navy Wessex were deployed at times during the operation, but most helicopter support came from AAC Sioux and Scouts, which were used for reconnaissance, liaison, patrol insertions and, to the extent of their load carrying capacity, logistic resupply. RAF Belvederes were also deployed to Aden and used to deploy heavy loads such as field howitzers to otherwise inaccessible mountain peaks. However, the large and technically complex Belvederes required extensive maintenance and suffered severe logistic problems; technical failures also led to several fatal accidents involving Belvederes. RAF Sycamores and Whirlwinds were also based in Aden, but they were established for local search and rescue duties, nonetheless, they were occasionally 'misemployed' in support of tactical operations.

Operational control of helicopters involved in the Radfan operations was exercised through the brigade headquarters located at Thumeir in the Radfan mountains, some 60 miles from Aden. Army helicopters and light fixed-wing aircraft established a forward detachment at Thumeir alongside the force headquarters, but RAF helicopters remained based at Khormaksar airport near the port of Aden. Belvederes were allotted to the task on a daily basis by Air Headquarters Middle East, but returned to Khormaksar each night. This was partly because of the difficulty of servicing Belvederes at Thumeir, but also because the RAF had concerns for the safety of the helicopters deployed forward overnight due to frequent attacks on Thumeir by insurgents.¹ However, at times, the lack of RAF representation at brigade headquarters and poor communications between Thumeir and Khormaksar led to serious misunderstandings between the Services.² According to Hickey, Belvederes were withdrawn from tasks without warning, sometimes at critical moments in an operation. Naturally, this was a considerable frustration for Army commanders, with potentially serious operational consequences. It seems that shortcomings in liaison meant that Army commanders were not always made aware of the Belvederes pressing maintenance requirements, while the air commander was not always made aware of the tactical situation on the ground.³ To improve liaison, a senior RAF officer was deployed to Thumeir to operate alongside the Force commander; nonetheless, RAF support helicopters remained based at Khormaksar. The Belvederes were later replaced by RAF Wessex, which proved to be more flexible, although they too suffered maintenance problems, especially due to the ingestion of sand into the engines.⁴ Wessex were sometimes deployed forward overnight, but for the most part remained based at Khormaksar.

There were, though, other misunderstandings between the Services. On occasions, RAF Belvederes did not deliver loads to the point on the ground indicated by supported troops, selecting instead their own dispatch points within the unit area. On the other hand, the Scouts would position their loads wherever the troops wanted them. The difference between the RAF and Army helicopters has been attributed to

¹ Dowling, *RAF Helicopters*, p. 280.

² Hickey, *The British Army and the Battlefield Aerial Vehicle*, p. 126.

³ *Ibid.*, p. 128.

⁴ Dowling, *RAF Helicopters*, p. 298.

the failure of the RAF pilots to appreciate the difficulties they were causing troops on the ground.¹ However, it may have had more to do with the difficulties they faced operating the Belvedere, the size and shape of which made it difficult for pilots to position the aircraft in the rocky terrain of most hilltop landing sites.² Again, a breakdown in communication was probably the main problem. Nonetheless, these problems may have reinforced Army mythology about poor helicopter support from the RAF.³

A form of airmobile operation evolved with troop carrying helicopters positioning troops for cordon and search operations to capture insurgents. These operations were often led by an AAC Scout, which would carry the ground commander, the RAF air commander, and a couple of troops armed with machine guns hanging out the sides of the helicopter. The main body of troops was carried in Royal Navy and RAF Wessex. These operations had some successes and obviously required a high level of cooperation between the helicopter units involved. During the campaign, a number of helicopters were hit by small arms fire, and in response to the threat, pintle-mounted machine guns were fitted to some helicopters as they had been in Borneo. To provide more substantial fire support, RAF Hunter fixed-wing fighters were sometimes used to provide close air support for helicopter operations.⁴

The guerrilla action moved to urban areas later in the campaign, and helicopters were used to monitor crowds and watch for suspicious activity in the streets. However, by 1967 the security situation had deteriorated further and, despite a number of operational successes, the British withdrawal from Aden was somewhat ignominious.⁵

Developments in Whitehall

The Air Ministry's attitude towards helicopters prior to the 1960s could be characterised as being highly sceptical of their military worth, principally because of their high cost and perceived vulnerability.⁶ In contrast, the War Office saw helicopters as 'essential to the Army in the future'.⁷ With the Air Ministry wholly responsible for the provision of air support to the Army at the time, inter-Service tensions were perhaps inevitable. Research indicates that task related asymmetries between horizontal organisations, such as the Army and RAF, may promote contention.⁸ The relationship between the Army and the RAF at the time could be characterised as one of asymmetric responsibilities, with the Army of questionable value to the RAF, but the RAF indispensable to the Army.

Nevertheless, operations in Malaya, Borneo and Aden had shown a continuing and growing demand for helicopters, and by 1960, there was a much wider acceptance in the RAF of their operational value. Meanwhile, there were significant changes in

¹ Farrar-Hockley, *The Army in the Air*, p. 196.

² Dowling, *RAF Helicopters*, p. 299.

³ Farrar-Hockley, *The Army in the Air*, p. 196.

⁴ *Ibid.*, p. 305.

⁵ For a report on the departure from Aden, see Air Chief Marshal Sir David Lee, *Flight From the Middle East*, Her Majesty's Stationery Office, London, 1980, pp. 242-256.

⁶ Sadler, *The Helicopter and the Struggle for its Control*, pp. 341-343.

⁷ Secretary of State for War John Hare, quoted in *Ibid.*, p. 311.

⁸ Richard E. Walton and John M. Dutton, 'The Management of Inter-Departmental Conflicts: A Model & Review', *International Science Quarterly*, 14 March 1969, pp. 73-84, quoted in Frederic A. Bergerson, *The Army Gets an Air Force: Tactics of Insurgent Bureaucratic Politics*, Johns Hopkins University Press, Baltimore, 1980, p. 53.

the way the defence organisation in the UK was managed. In the early 1960s, the three separate Service ministries (the Admiralty, the War Office and the Air Ministry) amalgamated into a single Ministry of Defence under a reform program initiated during the tenure of Lord Louis Mountbatten in the newly created post of Chief of the Defence Staff. The process was intended to promote inter-Service cooperation and gave much greater power to the Central Staffs (known colloquially as the Centre) over the three Services, which were now represented by separate departments (Navy, Army and Air Force) within the Ministry of Defence. The Ministry of Aviation Supply (formerly the Ministry of Supply) was later absorbed into the Ministry of Defence to become the Procurement Executive in 1971. Thus, major procurement decisions, such as those effecting helicopter requirements, were now subject to closer scrutiny from a defence-wide perspective, although the influence of the Services remained strong.

In 1965 the RAF proposed that it should assume responsibility for the aviation activities of all three Services, and in response, the Government established a committee under Field Marshal Sir Gerald Templer to examine the matter. The RAF's argument was based on the economic benefits of centralising the management of all flying activities within one Service, thereby reducing duplication. However, a strong coalition between the Army and the Royal Navy, which both vehemently opposed the RAF's proposal, helped defeat the RAF's case.¹ It is likely that the Army's argument was reinforced by the AAC integration scheme, which stressed the value of decentralisation, and by stressing the need for its pilots to be soldiers first and pilots second. For the most part, the Templer committee recommended maintenance of the status quo, but its report did lead to a review of some support functions. Templer's recommendation to form a Joint Aircraft Maintenance Command was rejected, but the Services did agree to rationalise aircraft technical support. Third and fourth line (deeper) maintenance of all Service helicopters became a Royal Navy responsibility, while the RAF took over deeper maintenance of all fixed-wing aircraft; the RAF also became responsible for supply of aircraft spares to all three Services.

Attention turned to future helicopter requirements. In 1967, the British Government announced its intention to withdraw forces from East of Suez and concentrate on its NATO commitments. This policy had significant ramifications for Britain's battlefield helicopters, which had largely been acquired to meet the needs of counter-insurgency wars fought outside the NATO area. As a result of the policy change, plans to procure medium lift helicopters (eg. Chinook) were shelved and other helicopter requirements had to be justified solely in the context of NATO operations. Unlike the situation in the United States, where air mobility was seen as an essential capability for a modern army, the concept had not found favour in Britain, where it was considered that the cost of the large number of helicopters required could not be justified. Such an approach has resonance with the 1930s, when the British Army considered that mechanisation could not be justified on cost grounds. It was nonetheless recognised that helicopters would improve Army mobility generally, and a requirement for helicopters to be able to lift six companies was established. Two of these companies were from the Royal Marines who would operate on the NATO flanks and be lifted by Royal Navy helicopters, leaving a requirement for RAF support helicopters to lift four companies. In addition to the transport helicopter requirements, the Army also sought new helicopters to supplement and eventually replace the ageing Sioux and Scout.

¹ Farrar-Hockley, *The Army in the Air*, p. 206.

Taken together, these requirements led to a politically inspired Anglo-French helicopter package, comprising French-built Pumas and Gazelles, and British-built Lynx. The RAF's requirement for transport helicopters was to be met by Pumas, while Lynx and Gazelle would be procured for the Army to replace the Scout and Sioux respectively; Gazelles were also required for the Royal Navy and RAF to be used in the training and communication roles.¹ Initially a requirement for 68 Pumas was specified, but the number was eventually reduced to 40, providing the capability to lift just two companies.² The Lynx was intended to be a utility helicopter, which was meant to imply that it was to be supposed to be simple and robust machine; however, it turned out to be far more complex than initially envisaged. It was also much larger than earlier Army helicopters and had the potential to encroach on the RAF's troop carrying role; however, the Army had other plans for the Lynx, and sought to arm some of its helicopters.

The arming of helicopters proved to be another issue that divided the Services. The Army was concerned that RAF ground attack aircraft could not respond quickly enough to deal with fleeting targets and sought organic airborne fire support. French experience in Angola and American experience in Vietnam had shown the efficacy of arming helicopters for offensive action, but the RAF contended that helicopters would be far too vulnerable in the more dense battlefields of Europe. Moreover, the RAF maintained that offensive air action was its responsibility and that fixed-wing aircraft (such as the Harrier) were more suitable platforms for the task than helicopters. The degree to which these views were inspired by the need to ensure that funds remained available to develop the RAF's Harrier force, which may have had to compete with funds for an Army anti-tank helicopter force, is not clear.³ Nonetheless, in the light of experiences in Borneo and Aden, where helicopters had frequently come under attack from small arms fire, the RAF recognised the need for helicopters to be able to defend themselves with prophylactic fire and agreed fitting 'button-on' armament to helicopters. However, the RAF continued to oppose the development of dedicated attack helicopters, pointing to the shortage of helicopters for existing tasks. Effectively, the RAF opted out of providing armed helicopters for offensive action.⁴

The arming of helicopters was also opposed within the Army, especially by supporters of armoured warfare who also stressed the vulnerability of helicopters.⁵ Institutional politics were an important factor, since armed helicopters would have to compete with established corps for resources, and with the Armoured Corps and Infantry keen to secure funds to modernise their armour and for mechanisation. Even so, there was a growing concern within the Army about the overwhelming superiority in numbers of Soviet tanks in Europe and the ability of the RAF to provide timely close air support.⁶ The AAC, no doubt keen to ensure support from the other corps and not to be seen as trying to usurp their role, emphasised that the armed helicopter would be employed in a supporting role, acting as a highly mobile reserve to be used in the event of an enemy breakthrough. Eventually, the role of armed helicopters

¹ Dowling, *RAF Helicopters*, pp. 401-403.

² *Ibid.*, pp. 396-404.

³ For an extensive and well reasoned debate on the issue, see Charles Dick 'Tactical Air Power on the Battlefield of Tomorrow', *RUSI Journal*, June 1978; and Air Chief Marshal Sir Christopher Foxley-Norris, Charles Dick and Group Captain R.A. Mason, 'Talking Points', *RUSI Journal*, June 1978.

⁴ Dowling, *RAF Helicopters*, pp. 404-415.

⁵ See comments by Field Marshal Sir Michael Carver, 'An Address to the IISS,' *Survival*, Vol. 19, No. 1, 1977, p. 36.

⁶ Dowling, *RAF Helicopters*, p. 404.

gained wider acceptance in the Army and, pending delivery of the Lynx, it was decided to equip Scouts with wire-guided SS-11 anti-tank missiles.¹

The planned withdrawal of British forces from the Far East, and introduction of new and more capable helicopters, offered the prospect of developing significantly improved airmobile and anti-tank capabilities over the next decade; however, plans were interrupted by continuing demands for helicopters in operations outside the NATO area.

THE 1970s: CONSOLIDATION

Restructuring the Army Air Corps

In 1970 the Directorate of Land/Air Warfare passed its responsibilities for airborne (ie. parachute) forces to other branches, and became the Directorate of Army Aviation, relocating from London to Middle Wallop. At the same time, the introduction of new and more complex helicopters to the Army presented challenges to the integration scheme, and a new organisation to recentralise Army Aviation was initiated. There were concerns about a drop in safety standards among the widely dispersed air troops and air platoons, but more critically, it was assessed that the new helicopters would overburden REME resources if they were dispersed too widely.² The new organisation brought the majority of Army aircraft under centralised command at brigade level by merging the previous brigade AAC flights with regimental air troops and air platoons to form brigade air squadrons. Nevertheless, a number of independent flights were maintained, and armoured reconnaissance regiments retained their own helicopters. Aircraft in the squadrons were based centrally, thereby reducing the logistic support burden and enabling the squadron commander to exercise more effective supervision, while in Germany, squadrons reported to aviation regiments at divisional level. This structure remained in place when Lynx and Gazelle were introduced to replace Scout and Sioux. The organisation of Army aviation in BAOR in 1973 is shown at Figure 4.1.

Although the new structure relieved some logistic pressures, some regiments resented the loss of integral aviation; moreover, manning difficulties remained severe.³ Experience levels were also very low, with a turnover of 85 per cent of personnel in Army Aviation every two years.⁴ It was therefore agreed to increase the cadre of AAC pilots, and introduce ground crews within the Corps to provide a greater degree of professional continuity. Pilots were also recruited directly into the AAC on short service commissions rather than relying on recruiting from within the Army. This presented the AAC with a dilemma. One of the Army's principal arguments against the employment of RAF pilots was that they did not have an Army background and therefore lacked the intimate knowledge of land operations; however, this argument applied equally to these new Army pilots.

¹ Farrar-Hockley, *The Army in the Air*, p. 213.

² *Ibid.*, p. 207.

³ *Ibid.*, p. 210.

⁴ Lieutenant Colonel J.R. Shrimpton, *Journal of Army Aviation*, No. 8, 1973, quoted in Hickey, *The British Army and the Battlefield Aerial Vehicle*, p. 189.

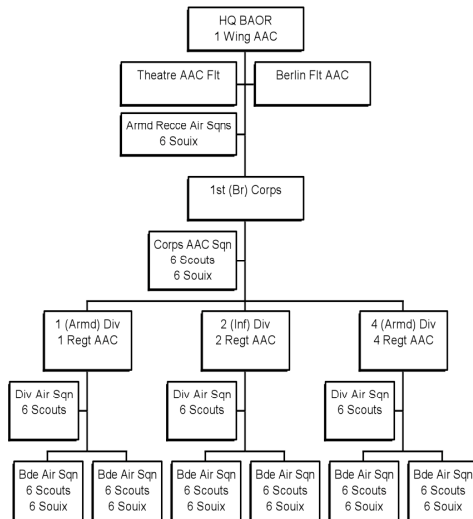


Figure 4.1: Organisation of the Army Air Corps in BAOR (1973)¹

RAF Support Helicopter Force

Attempts to procure medium lift helicopters for the RAF were thwarted by a series of financial cutbacks in the 1970s, and the backbone of the RAF support helicopters remained the veritable Wessex, joined by the Puma from 1971. The principal task for these helicopters was to support the Army, although they frequently faced a range of other commitments, often at short notice. In addition to their continuing overseas commitments, support helicopters were deployed virtually continuously in support of Army exercises in both the UK and Germany, operating in anything from single aircraft tasks to multi-squadron deployments.² One such large-scale deployment was Exercise *Sky Warrior* in 1972, which was designed to test the applicability of concepts in Europe.³ Due to the paucity of RAF support helicopters, two squadrons of Royal Navy Wessex were also deployed, as well as two AAC squadrons. Compared to

¹ Source: Hickey, *The British Army and the Battlefield Aerial Vehicle*.

² Dowling, *RAF Helicopters*, pp. 360-365.

³ Hickey, p. 174.

American uses of air mobility, the objectives were modest. For example, there were no attempts to mount heliborne assaults, reflecting continuing concern over the vulnerability of helicopters in forward areas. RAF staff at brigade headquarters, supported by Forward Air Controllers (FACs) to control fixed-wing air support, and Mobile Air Operations Teams (MAOTs) to control the helicopters, directed forward air operations.¹ Notwithstanding some continued enthusiasm for air mobility, the concept failed to attract powerful advocates at senior levels. With the Army focused on armoured warfare, and the RAF primarily concerned with fixed-wing operations, interest in air mobility languished.² It seems likely that the split in ownership of helicopters between the RAF and AAC weakened the ability of helicopter advocates to influence senior decision makers, but other factors, not least the shortage of helicopters to meet existing commitments, also constrained the development of air mobility in the UK.

Northern Ireland

One of the most significant commitments to emerge in the 1970s was support to the security forces in Northern Ireland. The ‘troubles’ began in the wake of the civil rights protests in 1969, which the Provisional Irish Republican Army (IRA) used as the basis for terrorism throughout the province. RAF and AAC helicopters were used extensively by security forces, supplemented at times by Royal Navy helicopters. Tasks included reconnaissance, the tactical positioning of troops and police, casualty evacuation, and the movement of personnel and supplies to installations throughout the province. An AAC flight (later a squadron) and RAF squadron (later two squadrons) were established at RAF Aldergrove, supported by detachments from the UK and Germany. RAF and most Army helicopters were based at RAF Aldergrove, just outside Belfast. Although they were collocated, RAF and AAC helicopters fell under separate command arrangements. The RAF squadron was under the command of the Station Commander at RAF Aldergrove (also known as the Senior RAF Officer, Northern Ireland (SRAFONI)), while the AAC operated within the Army chain of command. However, operational control of all helicopters was vested in the General Officer Commanding Northern Ireland (GOCNI), with tasking of both AAC and RAF helicopters directed by Headquarters Northern Ireland (HQNI), which had RAF and AAC liaison officers on its staff.

In addition to those helicopters tasked centrally, RAF and AAC helicopters were also deployed forward to Army bases throughout the Province, providing ‘on-call’ support to local brigades. There were inefficiencies in this arrangement in that forward deployed helicopters were not always fully employed, while at the same time there were insufficient helicopters to meet all the centralised tasks. Given the small area of operations (most of the Province is within one hour’s flying time of RAF Aldergrove) it might have been possible to increase efficiency by centralising all helicopter tasking, but Army units felt more sure of support if the helicopters were collocated with them. To some in the RAF, helicopter requirements in Northern Ireland seemed like a bottomless pit: the more aircraft that were assigned to the task, the less efficiently they were used.

¹ *Ibid.*

² Major General G.C.A. Gilbert, ‘Correspondence’, *British Army Review*, No. 67, 1981, p. 76.

The commitment to Northern Ireland, which at first was expected to be short term,¹ continued to draw on the RAF Support Helicopter Force and AAC in the following decades. Although the conflict helped the British to develop tactics and procedures for use of helicopters against terrorists, it was a significant constraint on the development of air mobility in Britain. Indeed, there was to be little progress in that field until the arrival of the Chinook into RAF service in the 1980s.

THE 1980s: INCREASING CAPABILITIES

Falkland Islands

In April 1982, Argentinian armed forces invaded the British dependant territories of the Falkland Islands in the South Atlantic, and in response, Britain assembled a joint task force to evict the invaders. The task force included nearly 200 helicopters, of which over 100 were Royal Navy Sea Kings and Lynx assigned to anti-submarine and anti-surface warfare operations. Battlefield helicopters included RAF Chinooks, Royal Navy Sea Kings and Wessex, as well as Gazelles and Scouts from the Royal Marine (RM) Commando Air Squadron and the AAC.² The battlefield helicopters were tasked in support of a force of about 8,000 troops, comprising 3 Commando Brigade, 5 Infantry Brigade, the Commando Logistic Regiment, the Harrier force on land, Rapier Batteries and special forces.³ The majority of the AAC and RM helicopters were organic to the brigades and tasked accordingly. RAF and Royal Navy support helicopters were tasked initially by the Commander Amphibious Warfare (COMAW), and later, once the ground forces were established ashore, by the Commander Land Forces Falkland Islands (CLFFI). A number of support helicopters were allotted to brigades on a daily basis, but about half were tasked by HQCLFFI; the one Chinook that survived the sinking of *SS Atlantic Conveyor* was tasked as a force asset. The contribution of support helicopters to the success of the operation was considerable, but there were a number of difficulties in their command and control.

The main shortcomings were in liaison, communications, tasking and organisation. Planning for the operation did not appear to give sufficient emphasis to the use of support helicopters, perhaps because there was insufficient understanding of their capabilities among the planning staff. In particular, there was little understanding of the capabilities of the Chinook, but given that it had only been in UK service for a few months, this was hardly surprising; nonetheless, these shortcomings could have been mitigated had expert staff been made available at the right level. A Support Helicopter Force Commander was appointed later in the operation, but he had no dedicated headquarters facilities or communications. To control support operations, a Supporting Arms Coordination Centre (SACC) was established aboard *HMS Fearless*, but conditions were cramped and the staff overtasked. Establishing self-contained supporting cells ashore at the earliest opportunity would have relieved the situation, but there was insufficient equipment for such an arrangement. Ashore, brigades were required to submit their requests for

¹ RAF helicopter crews were told that the deployment would only be for a weekend when they first deployed in 1969! Interview author with Group Captain A.N. Macgregor, 17 October 1997.

² Three of the four RAF Chinooks were lost when an Argentinian Exocet missile sank the *SS Atlantic Conveyor*.

³ Squadron Leader J.R.A. Whitney, 'Command and Control of Joint Force Helicopter Operations', *Hawk*, March, 1984, pp. 79-89.

the following day's support helicopter tasks to the SACC by 1500 hours. However, it was not always possible for brigades to establish their requirements by that time, a situation exacerbated by poor communications. Inadequate communications with support helicopter squadrons also prevented the SACC from having sufficient information regarding the availability of support helicopters to meet the next days tasking. On occasions, aircraft originally allocated to a brigade were allocated to other tasks, without the supporting unit being informed that the helicopter was no longer available. Consequently, brigades were never sure what helicopter support to expect. Additionally, countless helicopter flying hours were wasted because of poor coordination of loads.¹

The lack of suitable natural cover in the Falkland Islands, combined with the extensive array of Argentinian anti-aircraft weapons made it too risky to use Gazelles in the reconnaissance role. Nonetheless, along with Scouts, they were used extensively for liaison and casualty evacuation tasks in forward areas, winning the admiration of the troops they supported.² On a few occasions, Scouts and Royal Navy Wessex were employed to provide fire support, using their SS11 missiles against targets such as bunkers and gun positions.

Overall helicopter losses were not high, with just two Gazelles lost to Argentinian small arms fire, and one Scout to a Pucara ground attack aircraft.³ A few helicopters were lost in accidents and a Gazelle, which had been misidentified as an Argentinian aircraft, was shot down by a missile from a British Destroyer. This incident, and other cases of misidentification, highlighted the difficulty of airspace control in the combat environment and the need for a carefully managed system.⁴

Developments in the Support Helicopter Force

The principal role of the Support Helicopter Force in the 1980s remained to provide support to the British Army in NATO operations, but, as in previous decades, other commitments worldwide continued to draw on resources. These commitments included maintaining permanent detachments and squadrons in the Falkland Islands, Belize, Hong Kong and Cyprus; emergency deployments to Rhodesia (Zimbabwe) in 1979 to support the transitional government, and to Cyprus in 1983 to evacuate British troops and civilians from Beirut; and an ongoing commitment to the security forces in Northern Ireland. With the entry in to service of the Chinook in the early 1980s, the RAF was better placed to meet these commitments than it had been in earlier decades. The Chinook provided a significant increase in the lift capacity of the Support Helicopter Force, but due to other commitments, not least in the Falkland Islands, it was some time before it was able to make a significant contribution to the British Army in Europe. However, it is interesting to note that the Chinook had not been procured because support helicopters had been accorded a new status in defence priorities, but to overcome a potential underspend in the defence budget in 1977.⁵

By the mid-1980s, the Support Helicopter Force was organised to support BAOR with a squadron of Chinooks and a squadron of Pumas, which in the event of war would be reinforced with additional aircraft from the UK. Additionally, a

¹ *Ibid.*

² Farrar-Hockley, *The Army in the Air*, p. 223.

³ *Ibid.*, p. 223.

⁴ *Ibid.*, p. 224.

⁵ Wing Commander G.A. Woolley, 'The RAF's Helicopter Forces', *Journal of the Royal United Services Institute*, Vol. 123, No. 4, 1989, p. 29.

squadron of Pumas and a flight of Chinooks were assigned to support the brigade-sized UK Mobile Force (UKMF), and a flight of Pumas was assigned to support the land component of the multi-national Allied Command Europe Mobile Force (Land) (AMF (L)).¹ In Germany, the Support Helicopter Force was under the command of the Commander-in-Chief RAF Germany, but during transition to war, the aircraft would deploy to field sites and come under the operational control of the Commander Northern Army Group (COMNOTHAG). This arrangement accorded with the RAF doctrine of centralising control of air power at the highest practical level, but in practice, RAF support helicopters rarely operated with units outside the 1st British Corps. Other NATO nations assigned their support helicopters (and equivalents) at the lower national corps level (and below), and it is doubtful whether it would have been practical for RAF support helicopters to operate outside the British Corps area; consequently, there was little to be gained by placing control above corps level. Nonetheless, with so few support helicopters to support the entire Corps, (usually fewer than 20 Chinooks and 30 Pumas), some form of centralised control was necessary for them to be best utilised, but it might have been more appropriate for them to be assigned at corps level.

In the early 1980s, the Chinook and Puma squadrons operated independently, but later a Support Helicopter Force Headquarters was established to facilitate more efficient tasking and coordinate logistic and administrative support. The Support Helicopter Force was supported in the field by an Army signals regiment, and improvements in communications during the period helped the Support Helicopter Force increase its effectiveness. Nonetheless, practical problems, such as the distribution of the complex NATO airspace control plans to flight sites in the field, remained.

Relations between the RAF and the Army improved during this period, but some in the Army considered that there were still shortcomings with the support provided by RAF support helicopters, exemplified by comments such as: 'RAF SH pilots have not been brought up to understand the environment of the ground battle'.² While it was certainly true that the RAF support helicopter aircrew concentrated more on the technical and procedural aspects of flying, the Support Helicopter Force made considerable efforts to develop its tactical and operational skills. By the late 1980s, support helicopters had become a major force within the RAF, with a large proportion of its aircrew and ground crew remaining in the helicopter specialisation for the majority of their productive service life.³

Developments in the AAC

In common with the RAF helicopters, AAC helicopters were committed to a range of operations throughout the world in the 1980s, with deployments to the same theatres as the RAF support helicopters, but with additional detachments in Brunei, Berlin and Canada. The AAC Flight in Northern Ireland expanded first to a squadron, and later to a regiment, comprising two helicopter squadrons, a flight of fixed wing aircraft and a REME workshop.⁴ The introduction to service of the Lynx equipped with anti-tank

¹ Wing Commander D. Nequest, 'The RAF Support Helicopter Force', *RAF Air Clues*, September 1989, pp. 324-327.

² Lieutenant Colonel D.C. Parker, *British Army Review*, No. 84, 1986, p. 80.

³ Woolley, 'The RAF's Helicopter Forces', p. 30.

⁴ 'Buzzards and Eagles', *Air Force Monthly*, No. 76, July 1994, p. 26.

TOW¹ missiles in the late 1970s and early 1980s enabled the AAC to consolidate its anti-tank role, and the AAC became accepted within the Army as a Fighting Arm.² In contrast to earlier moves towards integration, the new helicopters were deployed at divisional level, where it was thought that they could be employed more effectively. This organisational arrangement matched the new AAC doctrine of employing anti-tank helicopters en-masse, to be used as mobile reserves in the event of enemy breakthrough.³ Although some Gazelles continued to be deployed at brigade level and below, the majority were employed in the anti-tank squadrons held at divisional level.

Airmobility Revitalised

The arrival of the Chinook gave new impetus to the development of air mobility and led to an extended series of trials using 6 Brigade in BAOR. The Brigade comprised two infantry battalions equipped with anti-tank guided weapons and a squadron of AAC Lynx and Gazelle, and was supported by engineers and air defence troops; RAF support helicopters provided its air transport. The only support helicopters available were those assigned to 1st British Corps, which had to be allocated to the Brigade for specific operations, before resuming other tasks in support of the Corps. Consequently, the RAF helicopters were placed under tactical control of the Brigade only for a specified period, which meant that the Brigade commander could never be certain how many helicopters would be made available to him, and his responsiveness was hampered because the support helicopters were not organic.⁴ Moreover, the relatively small number of support helicopters available at any one time (compared to the US Army) limited the mobility of the Brigade, which could not be moved in a single wave. Despite these limitations, considerable progress was made during the trials and the concept was strongly supported by senior Army officers.⁵ Following the trials, it was decided to establish 24 Brigade in the air mobile role on a permanent basis. The new air mobile brigade included two organic AAC regiments comprising squadrons of anti-tank Lynx/TOW, Gazelles, and Lynx Mk 9 in the Light Battlefield Helicopter (LBH) role; Chinooks and Pumas of the RAF Support Helicopter Force, which were assigned to the Brigade when released from other tasks, provided the main airlift capability for the Brigade. The organisation of 24 (Air Mob) Brigade is shown at Figure 4.2.

Ownership Back on the Agenda

With the renewed interest in airmobility, in 1986 the Ministry of Defence initiated a two-phased study to investigate future responsibility and management of support helicopters. However, the main thrust of the study was into the financial implications of transferring ownership of the RAF's Puma and Chinook fleets to the Army and not

¹ Tube-launched Optically-tracked Wire-Guided (TOW) missiles.

² Farrar-Hockley, *The Army in The Air*, p. 211.

³ Major-General J.D.W. Goodman, 'The British Army Air Corps', *Army Air Corps Journal*, 1987, p. 9.

⁴ Lieutenant Colonel A.I.G. Kennedy, 'Airmobility - a Practitioner's View', *British Army Review*, No. 85, 1987, p. 17.

⁵ General Sir Nigel Bagnel, 'Airmobile Operations in the Northern Army Group', *NATO's Sixteen Nations*, Vol. 33, No. 10, 1988, p. 75; and General Sir Martin Farndale 'The use of Helicopters on the European Battlefield', *Army Quarterly and Defence Journal*, Vol. 119, No. 4, 1989, p. 139.

into examining operational effectiveness.¹ It was concluded that size and complexity of the Chinook and Puma did not warrant a transfer of ownership; however, the outcome did not satisfy some in the Army who continued to argue for Army ownership of all battlefield helicopters. Meanwhile, a major reorganisation of the Ministry of Defence was under way following reforms initiated by the Secretary of State for Defence Michael Heseltine in 1983.² These reforms were intended to reduce overheads, improve accountability and encourage delegation of authority. The effect of these changes was to increase the influence of 'The Centre' over the three Services, with the amalgamation of staff functions for advice on operations, defence policy and resource allocation. Later, the same Defence Secretary became embroiled in a dispute with the Prime Minister over the fate of Britain's defence helicopter industry when it looked as though the future of Westland Helicopters, which by then was the only major manufacturer of helicopters in the UK, might be in jeopardy.

THE 1990s AND BEYOND

Gulf War

Within days of the Iraqi invasion of Kuwait on 2 August 1990, the British Government ordered RAF aircraft to Saudi Arabia to help defend the country against further Iraqi advances. The United States took similar action and attack helicopters of the American 82nd Airborne Division were among the first anti-tank forces deployed, forming a vital part of the defence forces in operation *Desert Shield*. Helicopters were excellent platforms for patrolling the vast open spaces of the Saudi Arabian desert, which could not have been covered as effectively by ground forces and in the build up that followed, over 2,000 helicopters were deployed to the region, including over 100 from the UK. The opening shots of operation *Desert Storm* were fired by AH-64 Apache helicopters of the 101st Airborne Division (Air Assault), which destroyed two key Iraqi early warning sites to clear a corridor for the first wave of attack to enter Iraq and attack strategic targets.³

As the senior coalition partner, the United States had a dominant influence on command and control arrangements for the operation. General Norman Schwartzkopf, the commander of US Central Command, was appointed as the Joint Force Commander for the operation and reported to National Command Authorities in the United States. General Sir Peter de la Billiere was appointed as Commander British Forces Middle East with responsibility of British forces of all three Services in theatre. He reported to Air Chief Marshal Sir Patrick Hine, who was appointed as the British Joint Commander for the operation, operating from a Joint Headquarters established alongside the RAF's Strike Command Headquarters at High Wycombe in Buckinghamshire. American forces in theatre were divided into land, air, sea and Special Forces components in accordance with United States doctrine, with individual commanders for each component. British forces were aligned with these arrangements

¹ Man S (Org) Study 611, 'Support Helicopters - Future Responsibility and Management', June 1987. See also 'Decision over UK Support Helicopters', *Janes Defence Weekly*, 30 January 1988, p. 162.

² *Central Organisation for Defence*, Command 9315, Her Majesty's Stationery Office, London, July 1984.

³ Brigadier General Robert H. Scales, Jr., *Certain Victory: United States Army in the Gulf War*, Office of the Chief of Staff United States Army, Washington DC, 1993, pp. 154-160.

and placed under the operational command of the appropriate United States commanders, but with a separate national chain of command. The air component was made up mainly of United States Air Force (USAF) assets assigned to the Central Command Air Force (CENTAF), but also included a reinforced air wing of mainly Tornados, Jaguars and support aircraft from the RAF. The land component comprised the Army Forces Central Command (ARCENT), which was formed from the US VIIth and XVIIIth Corps, and the US Marine Forces Central Command (MARCENT) comprising two Marine Corps divisions, complete with an organic Marine Air Wing. Initially, the British land forces contribution was a reinforced armoured brigade assigned to MARCENT, but this was later increased to an armoured division and reassigned to the US VII Corps.¹ The British also provided Special Forces, which were assigned to the US Special Operations Command Central Command (SOCCENT) as part of the special forces component.

Supporting the British division was a support helicopter force of 19 Pumas, 12 Chinooks, and 12 RN Sea Kings, and an AAC regiment of 24 Gazelles and 23 Lynx. Additionally, a number of RAF Chinooks were deployed to support British Special Forces, which operated independently of the division, reporting through the joint force special operations component (SOCCENT).² The collocation of special forces troops with the helicopter aircrew was essential to enable detailed planning to take place, and helped foster a high level of rapport between troops and aircrew; moreover, separating the helicopters from the rest of the Support Helicopter Force also contributed to operational security.

The commander of CENTAF, General Horner, was appointed the Joint Force Air Component Commander (JFACC) and had tasking authority over virtually all fixed-wing aircraft in theatre; he was also the Airspace Control Authority responsible for the management of all airspace in the theatre. This provided a high degree of unity of air effort, but his tasking authority did not generally extend to helicopters, which remained under their organic command; nonetheless, helicopter sorties were subject to the centralised airspace control procedures issued by the JFACC. With thousands of helicopter sorties each day, it would have been practically impossible to manage them centrally. Lieutenant General Moore, commander of the aviation combat element of the US Marine Corps during the Gulf War, described the air tasking process as follows:

As you get down to helos, you've got a real saturation problem on your hands. We, in essence, just let the Air Force [JFACC] know what was going on. You just have too many sorties going on. Marine air flew, for 44 days or so, 18,000 sorties. We had only 500 airplanes. We flew 9,000 of those sorties in the last five days. When you start to put those kinds of numbers in the system, you clog it up.

Special Forces helicopters, including RAF Special Forces Chinooks, were controlled by the SOCCENT, which coordinated their operations through liaison officers located with the JFACC staff. All Special Forces sorties into Iraq were individually identified on the daily Air Tasking Order issued by the JFACC.

¹ General Sir Peter de la Billiere, *Storm Command*, Harper Collins, London, 1992, p. 153.

² *Ibid.*, p. 223.

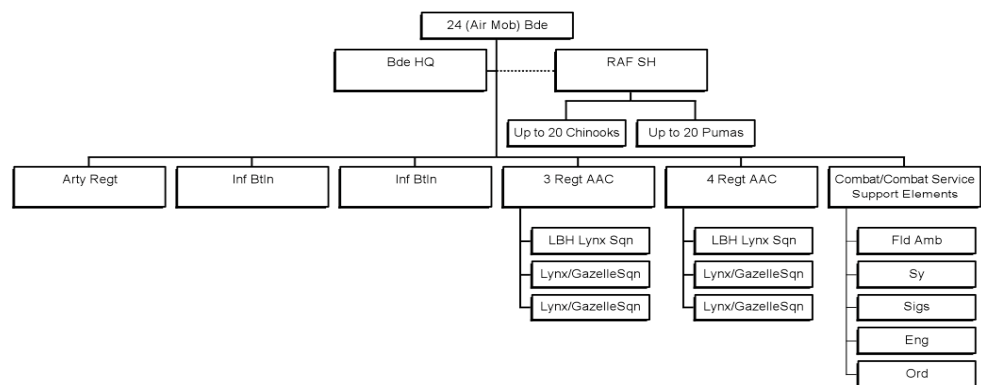


Figure 4.2: Organisation of 24 (Air Mob) Brigade

The main body of the Support Helicopter Force deployed under operational control of the land force commanders and operated in direct support of the British armoured division. The Support Helicopter Force established a number of field sites in remote parts of the desert within the British divisional area, and, as the ground forces advanced into Iraq, the sites were relocated further forward. The principal roles for the Support Helicopter Force were casualty evacuation and logistic support. Pumas and Sea Kings were allocated the casualty evacuation role and a number of these aircraft were attached to the brigades under tactical control to ensure timely response to tasks. In the event, however, there were few calls on the Support Helicopter Force in this role. The logistic support task fell mainly to the Chinooks, which flew a number of priority loads forward, but the main task for Chinooks became the rearward movement of Iraqi prisoners of war.

Effectively, the Support Helicopter Force was under centralised control at divisional level. The tasking process required units seeking helicopter support to bid through the chain of command to the air cell in the divisional headquarters, which would then forward the tasks to the Support Helicopter Force Headquarters for allocation to individual support helicopter sites for execution. The Support Helicopter Force Headquarters also provide administrative support and coordinated the extensive logistic requirements of RAF and Royal Navy support helicopters, as well as some logistic supply support for AAC helicopters.¹ The timely distribution of ATO and associated special instructions, which comprised up to 300 pages, to the dispersed support helicopters consumed vast amounts of signal traffic and was a demanding process. This factor, combined with the absence of a significant Iraqi air threat, militated against wider dispersal of the Support Helicopter Force.

Control of AAC helicopters was also centralised at divisional level. The Gazelles and Lynx were equipped for anti-tank operations and were grouped with the divisional artillery to form a 'Depth Fire Group'.² However, to some degree this arrangement divorced helicopter anti-tank operations from the brigades, which was not welcomed by the AAC or the brigades; it was later agreed that the AAC would provide combat reconnaissance patrols on call to the brigades.³ The AAC regiment included three squadrons, which were deployed to desert sites within the divisional area. Lacking the capabilities of Apache, AAC Lynx were not used for offensive operations during the air campaign, although they were kept busy with training and liaison tasks. During the ground war, the regimental HQ and squadrons advanced with division, but opportunities to employ the helicopters were limited by exceptionally poor weather during the first days of the offensive. AAC Lynx helicopters later engaged a number of targets, but compared to the American employment of Apaches, their contribution to the destruction of Iraqi armour was modest.

Immediately after the Gulf War RAF Chinooks deployed to Turkey to assist in the humanitarian effort to provide aid to Kurdish refugees fleeing from reprisal attacks by Iraqi armed forces. A large number of diverse agencies were involved with providing the relief effort, and coordinating this activity provided several challenges. Nonetheless, in the first three weeks of the operation, three RAF Chinooks carried over 1,300 tonnes of relief supplies and carried over 500 refugees in the difficult

¹ Group Captain R. Springett, 'Supply Support for the Support Helicopter Force in the Gulf War', *Air Clues*, Vol. 47, No. 7, July 1993, p. 252.

² Farrar-Hockley, *The Army in the Air*, p. 231.

³ *Ibid.*, p. 231.

mountainous terrain of southern Turkey and northern Iraq.¹ The operation continued for several months, and Royal Navy Sea Kings, which operated primarily in support of Royal Marines sent in to enforce the UN Safe Haven in northern Iraq, later joined the Chinooks.

Options for Change

In the aftermath of the Gulf War, and in response to the tremendous strategic changes in Europe in the wake of the collapse of the Warsaw Pact, the British forces began restructuring. There were large reductions in the personnel strength of both the British Army and RAF, but the AAC and Support Helicopter Force escaped most of the cuts, perhaps reflecting recognition of the importance of their roles in the 'new world order'. Indeed, new equipment programs to provide additional support helicopters and attack helicopters, which had been mooted since the mid-1980s, were finally endorsed.

There was also further rationalisation in the support area, with the formation of the Defence Helicopter Support Agency (DHSA) in 1994, bringing together the engineering support authorities and supply managers of all three Services into a single, collocated agency. The search for greater efficiencies and reduction of duplication also led to the creation of a Defence Helicopter Flying School (DHFS) in 1997, which brought together the basic helicopter training of aircrew from all three Services. Other initiatives included the establishment of a Permanent Joint Force Headquarters (PJHQ) to coordinate national joint operations at the military strategic level and the creation of a Joint Rapid Deployment Force (JRDF) to provide the framework for a joint force capable of responding to unpredictable crises.² The formation of these organisations illustrates recognition of the joint nature of operations and the need for harmonisation of command and control arrangements between the Services. Maintaining battlefield helicopters in the three separate Services in this joint and rationalised environment may seem anachronistic to some observers; indeed, the question of command and control of helicopters was raised in the House of Commons.³

More fundamentally however, these new structures raise the question of what is meant by ownership. Ostensibly, the role of the three Services is to raise, train and sustain operational forces for employment by joint or combined commanders. However, in the case of battlefield helicopters, a significant proportion of at least two of these functions, training and supporting, are conducted on a joint or tri-Service basis. In this environment, arguments over ownership seem to be utterly irrelevant to the real issue, which is to identify the arrangements for command and control of helicopters that provide the most militarily effective solution in operations at the highest practicable levels of efficiency.

¹ Wing Commander R.A Forsythe, 'The Role of the Military in Disaster Relief', presentation to *The Support Helicopter Conference*, Church House, London, 15-16 April 1993.

² Joint Warfare Publication (JPW) 0-01, *British Defence Doctrine*, Ministry of Defence, London, 1996, p. 6-17.

³ Mr Keith Simpson, MP, 'To ask the Secretary of State for Defence what plans he has to rationalise the command and control of attack and support helicopters under one service', *House of Commons Hansard Written Answers*, 16 June 1997, <http://www.the-stationery-off./text/70616w21.htm>, accessed 7 September 1997.

SUMMARY

The division of responsibilities between the RAF and the Army for the command and control of battlefield helicopters can be traced to the earliest days of aviation. Almost as soon as the RAF was created, there were attempts by the other two Services to resume control of specialised aerial services. The Army argued the case for its officers to be employed in the aviation tasks intimately associated with the ground battle, such as artillery spotting. This led to the establishment of Air OP squadrons, which although they were operated in direct support of Army units and the aircraft were flown by Army pilots, remained part of the RAF and were supported by RAF technicians. The creation of a glider force during World War II led to a requirement for large numbers of soldier pilots and the formation of the Glider Pilot Regiment. At the end of World War II, the War Office foresaw a requirement for helicopters, but the Air Ministry remained unconvinced of their technical viability, preferring instead to concentrate its resources on fixed-wing aircraft. Frustrated by the Air Ministry's unwillingness to meet Army demands for air support, the Army again sought to assume responsibility for its own aviation needs. This led to the establishment of the AAC in 1957, but to prevent any diminution of the RAF's role, Army aircraft were limited to a maximum of 4,000 pounds take-off weight. The weight limit was later relaxed, but a division of responsibility for helicopters between the RAF and the Army had been established, with the RAF operating larger troop carrying and cargo helicopters and the Army operating utility and liaison types.

The use of helicopters in the Malayan Emergency in the 1950s demonstrated the value of these machines in counter-insurgency operations in the jungle environment. Very few helicopters were available at the time so it was necessary for them to be centrally controlled, but the need for close liaison with supported units on the ground became clear. The value of helicopters in amphibious operations was demonstrated during the Suez crisis, leading the long-term establishment of troop carrying helicopters in the Royal Navy to support Royal Marine Commando operations.

During the 1960s, arrangements for the command and control of helicopters created tensions between the Army and the RAF. Problems were attributed to the RAF's doctrine of centralised control, but other factors, such as limited numbers of helicopters and technical difficulties, may not have been fully appreciated by those on the ground. On the other hand, while the AAC integration scheme proved popular with those units that received helicopters, it proved to be difficult to support. During the period of confrontation in Borneo, command arrangements for RAF helicopters were modified by decentralising control to improve responsiveness in the vast operating area. Technical difficulties with RAF Belvedere helicopters constrained the level of support they were able to provide to the Radfan force fighting in Aden, and inadequate liaison initially led to some serious misunderstandings between the RAF and the Army.

The lift capacity of RAF support helicopters was improved during the 1970s with the introduction of the Puma, but with continuing commitments for helicopters around the world, attempts to develop an airmobile capability were constrained. Additionally, support for the security forces in Northern Ireland became a significant draw on the helicopter forces of the AAC, RAF and, at times the Royal Navy. The merits of centralised versus decentralised control were exemplified by operations in the province, and a mixed system employing both concepts evolved. The 1970s also saw

the introduction of new helicopters to the AAC and the development of an offensive capability through the deployment of Sioux and Lynx armed with anti-tank missiles. At the same time, the difficulty of supporting the integration scheme led to a more centralised organisation for Army Aviation. A very high turnover of personnel in Army Aviation led to increases in the number of cadre personnel and the creation of aviation specialisations within the Army.

A number of lessons concerning command and control of helicopters emerged from the Falkland Islands conflict in 1982. Communication difficulties and inadequate liaison led to support helicopters not being fully utilised, and shortcomings in airspace control led to fratricide. However, once again, the value of helicopters in military operations was demonstrated. The introduction to service of the Chinook in the early 1980s brought a significant increase in the capability of the RAF Support Helicopter Force and rekindled developments in air mobility. Trials of the concept led to the establishment of 24 (Airmobile) Brigade, with an organic AAC regiment of anti-tank and light battlefield helicopters; however, the Brigade remained dependant on RAF support helicopters for the majority of its lift. While some in the Army complained that RAF control of support helicopters hampered the development of air mobility in the UK, the real problem was a shortage of helicopters to meet all the Army's requirements. In 1986, a Ministry of Defence study into the ownership of support helicopters found that the financial implications of transferring the helicopters to the Army did not warrant a change to the status quo. Within the Support Helicopter Force, command and control was improved by the establishment of a force headquarters to coordinate tasking and provide administrative and logistic support to support helicopters during field deployment.

British battlefield helicopters had a relatively minor role in the 1991 Gulf War. Although command and control arrangements for support helicopters appeared to have been satisfactory, they were not seriously tested because of the overwhelming success of the allied forces. AAC helicopters were controlled centrally at divisional level, but formed into armed reconnaissance patrols on call to the British brigades. One positive development was the collocation of helicopter aircrew with the Special Forces troops they supported, made possible by isolating the helicopters and aircrew for the remainder of the Support Helicopter Force.

As British forces restructured after the end of the Cold War, battlefield helicopters gained greater prominence in the Army and RAF. Meanwhile, the search for efficiencies led to increased rationalisation of support activities, while an increased emphasis on joint operations led to the establishment of joint force structures to harmonise operations across the Services. These developments have created an environment in which the helicopter forces in the UK could achieve far closer integration, obviating the need for a potentially pernicious change of ownership.

CHAPTER FIVE

THE AUSTRALIAN EXPERIENCE

The helicopter is the Army weapon of the future.
Lieutenant General Sir Phillip H. Bennett¹

INTRODUCTION

The structure of the Australian Defence Force (ADF) has much in common with that of the UK armed forces, albeit on a smaller scale. Moreover, Australia shares many aspects of its military heritage with Britain, having fought as an ally in both World Wars and during a number of regional campaigns. Close links have been maintained between the armed forces of both countries through mechanisms such as the American, British, Canadian, Australian (ABCA) Standardisation Programme, and officer exchange programmes. It is not surprising, therefore, that the development of helicopter forces in Australia is similar to that in the UK. However, a significant departure was made in 1986 when the Australian Government decided to transfer control of battlefield helicopters from the Royal Australian Air Force (RAAF) to the Army. The process of transfer could be seen as a precedent for the UK's battlefield helicopters, and there may be much to learn from the experience.

Accordingly, this chapter traces the development of the helicopter forces in the ADF, highlighting factors leading to the decision to transfer ownership. To set the scene, early developments of aviation in Australia are first outlined, followed by an overview of the introduction of helicopters to service. Developments in the helicopter forces of both Army Aviation and the RAAF are then explored, before highlighting some of the key issues that emerged with their operational employment in the Vietnam War. Factors leading to the decision to transfer the helicopters from the RAAF and the process of transfer are then analysed, before looking at some recent developments. Finally, the current structure of Army Aviation is described, along with proposals for its future development.

EARLY DEVELOPMENTS

Inter-Service Relations

Military aviation in Australia can trace its roots to the establishment of the Central Flying School and Aviation Corps at Point Cook in Victoria before World War I.² Both

¹ Quoted in Australian Army Manual of Land Warfare, Part Two, *Aviation*, Vol. 1, Pamphlet No. 1, *Army Aviation Operations*, Draft Version dated 12 September 1996, p. 2-1.

² Neville Parnell and Trevor Boughton, *Flypast: A Record of Aviation in Australia*, Australian Government Printing Service, Canberra, 1988, p. 13.

units formed part of the Army. During the War, units of the Australian Flying Corps operated with the Imperial Forces of the British Empire in the role of army cooperation. Many Australians also served with notable distinction in the (British) Royal Flying Corps (RFC) and the Royal Naval Air Service (RNAS).¹ After the War, the Minister for Defence appointed a committee under the chairmanship the Hon G. Swinburne to report on the needs of military aviation in Australia, no doubt mindful of the formation of the RAF as an independent air force in the UK in 1918. The Swinburne Committee recommended the establishment of a single Australian Air Corps, to be administered by an Air Board (comprised of members of the Naval and Military Boards), but with the wings of the Corps allotted to the Royal Australian Navy (RAN) and the Army.² Significantly, one of the key committee members, Major General Legge, who was also the Chief of the General Staff (CGS) at the time, dissented from the committee's recommendation, contending that 'unified control of naval and military aviation was unsuitable for Australia'.³ He argued that a joint Service arrangement would be unworkable and that Australia should have two separate air branches, one each under the control of the Army and RAN.⁴ However, Legge's views did not prevail and the Royal Australian Air Force (RAAF) was established in 1921. However, during the early years of its existence, the RAAF was explicitly subservient to the Navy and the Army.⁵

From 1921 until 1948, the RAAF remained the major supplier of Australian air power, albeit as a junior partner to the other two Services. During World War II, joint operations between the RAAF and both the Army and the RAN proved to be highly effective, especially in the South-West Pacific Theatre. Nonetheless, there were tensions between the Services, especially over the control of air power.⁶ However, as air power entered the nuclear and jet age in the post-war era, the RAAF enjoyed new status and was no longer subservient to the other two Services. Perhaps inevitably, its focus tended towards developing capabilities to conduct independent air operations, almost to the exclusion of roles in support of the Army and the RAN. The RAAF's lack of attention to the battlefield support role was a considerable frustration to the Army, and led to tensions in Army/Air Force relations over command and control of battlefield aircraft.⁷ Later, these tensions came to the fore in arguments over the command and control of battlefield helicopters.

¹ For an account of Australian Flying Corps operations in Word War I see F.M. Cutlack, *The Australian Flying Corps*, University of Queensland Press, St Lucia, Queensland, 1984.

² Alan Stephens, *Power Plus Attitude: Ideas, Strategy and Doctrine in the Royal Australian Air Force 1921 -1919*, Australian Government Printing Service, Canberra, 1992, p. 15.

³ Major General Legge, quoted in C.D. Coulthard-Clark, *No Australian Need Apply*, Allen and Unwin, Sydney, 1988, p. 179.

⁴ Stephens, *Power Plus Attitude*, p. 15.

⁵ *Ibid.*, p. 15.

⁶ For an account of Army/RAAF relations during the period see Major R.J. Parkin, *The Goodwill of the Services and the Problems of a Lesser Partner: The Creation of the Australian Manual of Direct Air Support 8 June 1942*, Air Power Studies Centre Paper Number 52, March 1997.

⁷ Alan Stephens, 'The Odd Couple: Army/Air Force Relations', in Jeffrey Grey & Peter Dennis (Eds), *From Past to Future: The Australian Experience of Land/Air Operations*, Australian Defence Force Academy, Canberra, 1996, p. 146.

Introduction of Helicopters

The Australian defence department first considered using helicopters for military applications in 1943. The Army stated a requirement for 25 helicopters to be used in the South-West Pacific Theatre in situations where ordinary aircraft could not operate. The tasks for helicopters envisaged by the Army included delivering urgent supplies, transporting personnel to forward positions and evacuating wounded.¹ It was agreed that the Air Board would develop helicopter requirements based on Army and Navy needs, and then manage helicopter production and introduction to service. In due course, the Air Board arranged to acquire six Sikorsky R-5 helicopters from the US under lend-lease arrangements, but the war ended before the helicopters were delivered and so the order was cancelled. Nonetheless, the RAAF recognised that there might still be a place for helicopters, and in 1946 an order was placed for an American built Sikorsky S-51, principally to investigate the use of helicopters in civil emergencies.² However, the Air Board also wished to evaluate the suitability of helicopters in support of mobile land warfare and maritime operations.³ The first S-51 arrived in Australia in 1947 and entered Service with the RAAF, soon proving its value in activities such as medical evacuation, bushfire fighting, forestry patrols and search and rescue. Two more S-51s were purchased in 1951, but plans to form a larger helicopter force and develop other roles for the helicopter became moribund for many years, perhaps reflecting the low priority afforded to these roles by the RAAF.⁴

Meanwhile, the Army continued to feel frustrated by the lack of air support provided by the RAAF, and sought to gain control of its own air arm. In doing so, it was no doubt encouraged by developments in the RAN, which formed its own Fleet Air Arm in 1948 to operate the fixed-wing aircraft aboard its recently acquired aircraft carrier HMAS *Sydney*.⁵ To provide the personnel for its air arm, the RAN employed ex-Royal Naval aircrews and began training its own navy pilots, rejecting an offer from the RAAF to provide the aircrew. Meanwhile, RAAF arguments concerning the benefits of centralisation of air assets, maintenance facilities and training were rejected in favour of naval aviation being wholly staffed and controlled by 'navy men'.⁶ By the time the RAN took delivery of a second carrier (HMAS *Melbourne*), Australia was operating two air forces. The establishment of Australia's third air force was a more incremental process.

The first step came in 1951 when the Air Force agreed that Army pilots should fly light aircraft on Air Observation Post (Air OP) duties. At the time, the RAAF considered that the skills of its highly trained and specialised pilots would be 'wasted' on light aircraft. It was also agreed that it would be more effective to teach Army pilots to fly light aircraft than to train RAAF pilots in the intricacies of land warfare. The policy statement on Army aircraft stipulated that the RAAF would continue to be responsible for acquiring and maintaining the aircraft, and that the Army would not

¹ Minute from the Chief of the General Staff, 11 October 1943, quoted in Parnell and Boughton, *Flypast*, p. 197.

² *Ibid.*, p. 197.

³ Air Board Agendum 7661, 24 October 1946, quoted in Alan Stephens, *Going Solo: The Royal Australian Air Force 1946-1971*, Australian Government Printing Service, Canberra, 1996, p. 429.

⁴ *Ibid.*, p. 430.

⁵ Stephens, *Power Plus Attitude*, p. 115

⁶ 'RAN Should Control its Own Air Arm', *The Argus*, 13 June 1947, quoted in Stephens, *Power Plus Attitude*, p. 115.

establish its own aviation organisation.¹ Accordingly, the RAAF formed an Air OP Flight equipped with six Austers to support Army tasks and to train Army pilots. However, the unit, which had only very limited resources, was hard pressed to meet its commitments and the Army considered the level of support it provided to be totally inadequate.² The Air Board acknowledged that the Army had a legitimate requirement for 18 Air OP aircraft and that the Austers were obsolete, but refused to fund more than eight Cessna 180 aircraft as replacements, despite their relatively insignificant cost. Subsequent requests from the Army to supplement the new aircraft with helicopters were simply ignored.³ The RAAF's apparent indifference to the Army's needs no doubt added to the Army's determination to wrest full responsibility for these aircraft from the Air Force. In the meantime, to supplement the support provided by the Air OP Flight, the Army established the 1st Aviation Company in 1957, operating chartered civil aircraft to be flown by its own pilots.

In 1957, the Army presented a case for assuming full responsibility for its own light aircraft support.⁴ It was argued that light aircraft were essential to the functioning of the Army, and that, consequently, the Army should be responsible for the 'procurement, operation and maintenance of such fixed wing and rotary-wing aircraft as required'.⁵ The Army cited precedents in the US, where the army had operated organic light aircraft for many years, and the UK, where responsibility for Air OP and light liaison aircraft had recently been transferred from the RAAF to the Army. Clearly, the Army felt that it could do a better job of meeting the requirement than the Air Force; given the failure of the Air Force to respond to the Army's needs at the time, this conclusion was perhaps justifiable. In some respects, it may have suited the RAAF to be relieved of the responsibility of providing this type of support, but as the Minister for Air, Athol Townley, pointed out, the real issue should have been whether the duplication of air effort was appropriate for Australia.⁶ Moreover, the creation of yet another air arm ran contrary to the Air Force doctrinal principles of 'unity' and 'centralisation'. However, it would appear that the Air Force leadership did not pursue these arguments.⁷

Army Aviation Formed

Following the precedents set in the US and UK, approval was given for the Army to own and operate light aircraft up to 4,000 pounds all-up-weight and in limited roles.⁸ These criteria were intended to prevent the Army expanding into other air power roles such as troop transport, resupply and armed close air support.⁹

¹ Policy Statement No. 7, *The Organisation of Light Aircraft in Support of the Army*, quoted in *Ibid.*, p. 128.

² Major N.R. Pinkham, 'Army Aviation in Australia', *Aviation Historical Society of Australia Journal*, September-October 1972, p. 45.

³ Stephens, *Going Solo*, p. 313.

⁴ Department of Army paper entitled 'Light Aircraft Support for the Army', quoted in *Ibid.*, p. 314.

⁵ *Ibid.*, p. 314.

⁶ Air Board Agenda 12567, 9 November 1957, quoted in *Ibid.*, p. 315.

⁷ *Ibid.*, p. 315.

⁸ The roles of Army aviation were limited to command and control, liaison and communication, air dispatch letter service, message dropping, photograph delivery, reconnaissance and cable laying, freight delivery, supply dropping and artillery observation.

⁹ Air Support for the Army, Light Aircraft Support, 11 April 1960, quoted in *Ibid.*, p. 316.

In December 1960 the Army established No. 16 Army Light Aircraft Squadron to fulfil its new roles.¹ The unit was formed at RAAF Amberley in Queensland from the nucleus of the Air OP Flight, and was equipped with Cessna 180 aircraft and Bell 47 Sioux helicopters. At the time, the Army lacked experience in flying supervision and technical expertise in aircraft maintenance, and therefore remained dependent on RAAF support in these areas. The RAAF also retained responsibility for a number of other specialised activities such as procuring aircraft, maintenance standards, technical publications, flying safety, accident investigation, meteorological services and air traffic control. Although this arrangement was brought on by necessity, it was also highly efficient since it avoided the need for the Army to duplicate these functions, thus saving the attendant overhead costs. However, the RAAF was not willing to support this arrangement indefinitely and sought to 'get [its] technical people back onto RAAF tasks'.² Lacking confidence in the Air Force's willingness to meet its needs, the Army was also keen to assume full responsibility for its air arm. Consequently, it was agreed that the RAAF would train sufficient Army technicians to enable them to take over RAAF functions, and from 1964, the RAAF began to extricate its personnel from Army Aviation. Nevertheless, the RAAF retained responsibility for airworthiness, engineering standards, aviation supplies and flight safety management.

Army aviation continued to grow, and in 1966, the Army established the 1st Aviation Regiment, which comprised three aviation squadrons. Two years later the Army Aviation Corps was formed, and in 1969 a new Army Aviation Centre was established at Oakey, a former RAAF station about 100 kilometres from RAAF Amberley. The Centre was intended to be the hub of Army aviation, where soldier pilots could be trained to 'think and appreciate situations in an Army manner'.³ The move marked a symbolic split of Army Aviation from RAAF influence, but inevitably involved considerable overhead costs. The fact that the Army found it necessary to indulge in this additional expenditure is perhaps an indication of the divergence of doctrine between the RAAF and the Army at the time. It certainly seems clear that the Army considered the ethos of the Air Force to be incompatible with its own needs.

Another distinction between the Army and the Air Force at the time was in their approach to the selection of pilots. Central to the RAAF's ethos is that professional mastery of the air environment demands that pilots be employed as full-time professionals.⁴ This is considered necessary to enable aviators to acquire the depth of expertise needed for planning, directing and executing the application of air power. Conversely, the Army considered that a background in traditional Army disciplines was essential for aircrew involved in air/land warfare and that aviation skills could be acquired as a secondary skill. Consequently, the Army selected most of its pilots from other corps to serve for a limited time in flying duties before resuming their mainstream careers. Later though, the high cost of training pilots made this policy unsustainable, and the Army began recruiting pilots directly into the Aviation Corps on short service commissions. This change of policy also tacitly acknowledged the advantages of employing pilots as full-time professional aviators; moreover, since

¹ Pinkham, 'Army Aviation in Australia', p. 45.

² Air Marshal Murdoch, Chief of the Air Staff, quoted in Stephens, *Going Solo*, p. 316.

³ Policy document on Construction of an Army Aviation Centre at Oakey, Queensland, quoted in *Ibid.*, p. 320.

⁴ DI(AF) AAP 1000, *The Air Power Manual*, 2nd Edition, Royal Australian Air Force, Air Power Studies Centre, Canberra, March 1994, p. 45.

helicopters pilots were now recruited directly into flying appointments, it undermined claims that helicopter pilots required a professional army background.

RAAF Helicopters

In 1959, the RAAF raised a requirement for helicopters in the search and rescue role with casualty evacuation and light liaison considered secondary tasks; evidently, Army support was not paramount in the RAAF's considerations for these aircraft. However, when the Government approved the purchase of eight Bell UH-1 Iroquois helicopters for the RAAF, their role was changed to search and rescue *and* Army support.¹ Nonetheless, when No. 9 Squadron was reformed in 1962 to operate the Iroquois, it was designated as a search and rescue squadron by the RAAF, but it soon became apparent that Army support would be the main role of the Iroquois.² A second Iroquois squadron was established in 1964, deploying to RAAF Butterworth in Malaysia later that year.³

In addition to the Iroquois, the Army sought larger helicopters to improve its tactical mobility. In 1962, the Cabinet approved the purchase of eight heavy lift helicopters; however, following several delays in the procurement process, it was many years before these aircraft were actually delivered. Initially, the Army's requirement for heavy lift helicopters was based on the need to support dispersed units in its new *Pentropic* structure. The *Pentropic* structure, which had been designed for jungle war fighting in the tropical regions to Australia's north, was introduced to the Australian Army following the development of the *Pentomic* structure in the US Army in the early 1960s.⁴ One of the requirements of the *Pentropic* structure was to increase the mobility of ground troops, and it was thought that this requirement could best be met by large helicopters. Consequently, helicopters came to be seen by the Army as fundamental to its conduct of land operations. However, the RAAF, which was responsible for introducing these aircraft into service, had other priorities. At the time, the RAAF faced the significant challenge of introducing several new fixed-wing aircraft into service, including the F-111, Mirage, P-3 Orion and C-130 Hercules. Consequently, it probably did not relish the added complication of introducing large and potentially complex helicopters to its fleet.⁵ As procurement of the heavy lift helicopters was repeatedly set back, the Army accused the Air Force of dragging its feet over the procurement and no doubt felt that the RAAF was again failing to meet its legitimate needs. However, the difference of opinion over the priority for helicopter procurement was probably indicative of a more fundamental failure to establish a joint approach to requirements. Nevertheless, as the RAAF Historian has noted, the RAAF should have strived to support the Army in the way the Army wanted, not the way the RAAF found least troublesome.⁶ It was against this background of poor inter-Service relations that the first RAAF helicopters deployed to Vietnam War in 1966.

¹ Stephens, *Going Solo*, p. 430.

² RAAF Historical Section, *Units of the Royal Australian Air Force: Vol. 4 Maritime and Transport Units*, Australian Government Publishing Service, Canberra, 1996, p. 3.

³ RAAF Historical Section, *Units of the Royal Australian Air Force: Vol. 2: Fighter Units*, Australian Government Publishing Service, Canberra, 1996, p. 19.

⁴ The *Pentomic* structure was based on the requirement to disperse troops on the battlefield to increase their survivability against nuclear weapons that it was thought might be used in a war in Central Europe. Dr David Horner, *From Korea to Pentropic: the Army in the 1950s*, Chief of Army's History Conference, Canberra, 23 September 1997.

⁵ Stephens, *Going Solo*, p. 317.

⁶ *Ibid.*, p. 315.

VIETNAM

In 1966, eight Iroquois from No. 9 Squadron were deployed to Vung Tau in South Vietnam to support the 1st Australian Task Force (ATF) operating throughout Phuoc Tuy Province. The RAAF appear to have been reluctant to deploy the helicopters, which were ill prepared for the task facing them, lacking armoured seats, door gun mounts and body armour for the crews.¹ Moreover, it appears that the RAAF hierarchy did not fully appreciate the seriousness of the task faced by ground forces in Vietnam, a view given credence by the terms under which the RAAF helicopters deployed. When the RAAF helicopters were deployed, senior Air Staff in Canberra were keen to see that they were not put to undue risk and issued a directive placing strict limitations on their employment. For example, RAAF helicopters were authorised to lift troops only 'from a secure staging area to a landing zone that is relatively secure and where enemy resistance is not expected', and 'from an area of operation to a secure staging area when enemy resistance is anticipated only on the last lift from the landing zone'.² When Australian Army troops found themselves in difficulty requiring helicopter support, the RAAF helicopter squadron commander was placed in the invidious position of trying to meet the legitimate demands of local Army commanders without compromising his orders from the Air Staff. In a wider sense, instances of blurred lines of command and micro-management by remote authorities came to typify the Vietnam War, and may have been a factor in the ultimate failure of American intervention.³

The Army also operated its own aircraft in Vietnam, including six Bell 47 Sioux helicopters and Cessna 180 fixed-wing aircraft from 161 Reconnaissance Flight. Army aircraft were fully integrated into the operations of 1ATF and based at Nui Dat alongside 1ATF headquarters.⁴ The Flight had a number of RAAF personnel on its strength, but some of them seemed less than happy to be serving with an Army unit; an RAAF officer who visited the airmen noted: 'the reaction of the airmen to field conditions has at the outset been disappointing.'⁵ It seems that the airmen were ill prepared for their task and their reaction to the conditions probably did little to engender the RAAF to the Army.

Relations between 9 Squadron and the task force during the first three months of operations in Vietnam have been described as bitter, with the task force commander claiming that the RAAF seemed to lack urgency in their conduct of operations and failed to act appropriately to orders.⁶ Some went further, describing the relationship between the RAAF and Army as one of 'conflict, friction, antagonism, ill will and lack of cooperation' and as 'very, very bad'.⁷ One issue typifying the difference of outlook was the location of 9 Squadron. The task force commander wanted the Squadron based forward at Nui Dat alongside the task force headquarters, but the RAAF refused to

¹ Ian McNeill, *To Long Tan: the Australian Army in the Vietnam War 1950 – 1966*, Allen & Unwin, Sydney, 1993, p. 431.

² Department of Air Organisational Directives 9/66 and 11/66, quoted in Stephens, *Going Solo*, pp. 292-3.

³ Martin van Creveld, *Command in War*, Harvard University Press, London, 1985, pp. 258-260.

⁴ Don Dennis, 'The Possums of Nui Dat: Australian Army Aviation 1967-1968', *Australian Aviation*, November 1985, pp. 93-96.

⁵ Chris Coulthard-Clark, *The RAAF in Vietnam: Australian Air Involvement in the Vietnam War 1962-1975*, Allen & Unwin, Sydney, 1995, pp. 66-69.

⁶ Ian McNeill, *To Long Tan*, p. 300.

⁷ Major Piper, who served in the ATF headquarters, quoted in *Ibid.*, p. 431.

move from Vung Tau.¹ The RAAF's reluctance to move may have been partially motivated by the difficulty of servicing the helicopters at night at Nui Dat, where it was forbidden to use lights because of the threat of enemy fire. However, the fact that RAAF personnel enjoyed relatively comfortable accommodation at Vung Tau probably fuelled perceptions in the Army that the RAAF was reluctant to become fully engaged in the ground war. Since Army helicopters operated at Nui Dat, apparently without difficulty, the RAAF's case may have seemed unconvincing to some.² Whatever the merits of the RAAF's case, it should have been up to the operational commander to make such decisions and the failure of the RAAF to respond to the Army's requirements did not help its case for retaining control of the helicopters.

To improve liaison with the task force, the senior RAAF officer from Vung Tau, Group Captain Raw, relocated to the task force headquarters and established an air transport operations centre. However, Group Captain Raw was inexperienced in air/land operations and his relationship with the commander of the ATF was strained.³ In contrast to the poor relations at headquarters level, however, 9 Squadron established strong rapport with a number of Army units and, despite an inauspicious start, gained a high reputation for its helicopter operations during the war.⁴ In particular, relations between 9 Squadron and members of the Australian Special Air Service (SAS) have been described as especially close.⁵ The courage and bravery of the RAAF helicopter pilots was widely recognised, notably during the Battle of Long Tan, when they flew urgent supplies to beleaguered Australian Army troops in appalling weather conditions and in the midst of an intense small-arms battle.⁶ It is notable that this action, which may have been vital to the success of the battle, was in clear contravention of the Air Staff directive. Nonetheless, damaging rumours about the failure of the RAAF helicopters to support the Army persisted and became accepted as conventional Army wisdom.⁷ This could be explained by the environment of strained inter-Service relations, in which any isolated incidents of inadequate support by the RAAF could be taken out of context and used by the Army as leverage in wider political battles.

To meet the demands of the war, the RAAF acquired more helicopters and the number of Iroquois on 9 Squadron was doubled. The rapid expansion of the RAAF's helicopter fleet required a significant increase in the number of pilots and technicians to support the increased flying effort. As a relatively large air organisation, the RAAF was well placed to absorb the expansion by drawing on other parts of the Service; nonetheless, it had to rely on the supply of pilots from the Royal New Zealand Air Force and the RAN for a short time.⁸ In fact, the RAN had already established a helicopter flight in Vietnam, operating with the US Army's 135th Assault Helicopter Company.⁹

Many ATF operations were also supported by US Army helicopter units and inevitably comparisons were sometimes drawn between the RAAF and the US Army. With a huge fleet of helicopters at its disposal, the US Army was willing to endure losses at a rate that could not have been sustained by a relatively small military force

¹ *Ibid.*, p. 300.

² Coulthard-Clark, *The RAAF in Vietnam*, p. 69.

³ Stephens, *Going Solo*, p. 294.

⁴ *Ibid.*, p. 296.

⁵ Coulthard-Clark, *The RAAF in Vietnam*, pp 148-150.

⁶ Lex McAully, *The Battle of Long Tan*, Hutchinson, Hamworth, Victoria, 1986.

⁷ See for example Lex McAuley, *The Fighting First: Combat Operations in Vietnam 1968-69, The First Battalion, The Royal Australian Regiment*, Allen & Unwin, Sydney, 1991, pp. 134-5.

⁸ Coulthard-Clark, *The RAAF in Vietnam*, p. 139.

⁹ Parnell and Boughton, *Flypast*, p. 307.

like that of Australia; indeed, many professional airmen considered the US Army's use of helicopters in Vietnam to be profligate.¹ Nonetheless, the US Army's wholesale exploitation of helicopters no doubt encouraged some in the Australian Army that there was much to be gained by taking full ownership of the helicopters. Not all comparisons were in the US Army's favour however. One soldier contrasted the difference between flying in US Army helicopters, flown by young warrant officer pilots, and RAAF helicopters:

There was a remarkable difference in flying US air as opposed to RAAF air. The RAAF had officer pilots and the aircraft looked reasonably serviceable. The choppers we clambered into [US Army] looked tatty and well worn. There were no seats and we sat on the floor of the Iroquois, linking our arms together and praying we wouldn't fall out where there was normally a door.²

Another issue that created friction between the Services was the arming of helicopters. RAAF helicopter operations were sometimes supported by US Army gunship helicopters (modified UH-1 Iroquois), but coordination of gunship missions was difficult and the arrangement was not always entirely satisfactory.³ Pending acquisition of an Australian helicopter gunship capability, 9 Squadron instituted local modification of its helicopters to provide an interim capability. Suitable armaments, including forward-firing mini-guns, rocket launchers and door-mounted machine guns, were 'borrowed' from the US Army and successfully installed on the Iroquois by RAAF technicians.⁴ The modifications were very successful and increased the capability of 9 Squadron, but the Army and some members of the RAAF sought a more potent gunship capability in the form of the Bell AH-1 Cobra.⁵ The Army presented a cogent case in favour of the Cobra, but the Air Staff insisted that the modified Iroquois were satisfactory. The RAAF's willingness to accept a second rate solution for its helicopter requirements was in stark contrast to its attitude towards fixed-wing aircraft, where the need to always acquire leading edge technology had been firmly established. Although the gunship order was later cancelled, the RAAF's attitude towards Army requirements no doubt added to the Army's dissatisfaction with helicopter support from the RAAF.

THE 1970s AND 80s

By the mid-1970s, the RAAF's fleet of helicopters had grown to two and a half squadrons of UH-1 Iroquois and a squadron of 12 Boeing CH-47 Chinooks, all designated primarily in Army support roles.⁶ However, although helicopters formed a significant force within the RAAF, expertise in helicopter operations tended to become diluted in the RAAF's broader command structure, with no centralised agency to coordinate the operation of helicopters or develop operational doctrine. During normal

¹ Coulthard-Clark, *The RAAF in Vietnam*, p. 142.

² Gary McKay, *In Good Company: One Man's War in Vietnam*, Allen & Unwin, Sydney, 1987, pp. 76-77.

³ Coulthard-Clark, *The RAAF in Vietnam*, p. 160.

⁴ *Ibid.*, pp.160-167

⁵ Department of Defence, *Defence Report*, Australian Government Publishing Service, Canberra, 1969, p. 41, quoted in Coulthard-Clark, *The RAAF in Vietnam*, p. 181.

⁶ Parnell and Boughton, *Flypast*, p. 296.

operations, command and control was exercised through the Air Officer Commanding Operational Command (later Air Command) and through air base commanders, who usually had a background in fast-jet operations and little personal experience of helicopter operations. Moreover, because helicopters were relatively new to the RAAF, there was no depth of experience in helicopter operations among senior RAAF officers at the time. Consequently, the helicopter force failed to gain significant advocacy at senior levels in the RAAF. Command and control was improved later when the helicopters became part of the Tactical Transport Group (TTG) within Air Command when the RAAF was restructured to form Force Element Groups (FEGs). However, it is notable that while all other FEGs were commanded by an Air Commodore ('One Star' commander), the TTG was commanded by a Group Captain, reinforcing the perception that the RAAF afforded a lower status to helicopters within its organisation.

Peacetime arrangements for command and control of RAAF helicopters was similar to those for other forms of tactical air support. Army units requiring helicopter support would bid through the Army chain of command to Land Command, which would then submit requests for helicopter support to Air Command, which in turn tasked the helicopter squadrons. Liaison was arranged through RAAF air liaison officers established at brigade and divisional level in the Army, and through Army ground liaison officers at command and squadron level in the RAAF. During operations, it was envisaged that helicopters would be assigned to the commander of the Joint Operational Deployment Force, with Operational Control exercised through the commander of the Tactical Air Support Force, an appointment filled by the officer commanding the Tactical Transport Group.¹ Some Army officers felt that they lacked adequate control of the battlefield helicopters and it may be that the RAAF did not always vest sufficient control in the operational commander. Post exercise reports criticised the bureaucratic processes for arranging air support and the remoteness of air headquarters.² Commenting on the control of air power generally, one Chief of the Air Staff later conceded:

Too often in the past, the Air Force has been reluctant to grant the level of command the operational situation and the commander's directives required. Such reluctance has no place in the ADF; in military operations, blurred or cross lines of command too often culminate in disasters. ... Decentralising execution means a devolution of responsibility and authority to a level of the operating elements.³

On occasions, the attitude of RAAF pilots may also have caused frustration for Army commanders. Army officers often cite instances where, at the end of a day's training in the field, RAAF pilots would fly to a motel for the night rather than stay in an Army tent. RAAF claims that such accommodation was necessary to provide 'mandatory aircrew rest conditions' were undermined when pilots regularly appeared the next morning suffering the effects of a heavy night out.⁴ Moreover, the RAAF's tendency to support its own requirements (rations, transport, accommodation etc)

¹ Squadron Leader P.G. Hickerton, *Army Battlefield Support Helicopter Operations*, RAAF Command and Staff Course paper, 19 October 1990.

² Post Exercise Reports, Kangaroo '83 and '86, quoted in O.M. Eather, 'The Tactical Air Support Group', in *Australian Defence Force Journal*, No. 98, January/February 1993, p. 16.

³ Air Marshal R.G. Funnell, 'Air Power Strategy', in Desmond Ball (Ed), *Air Power - Global developments and Australian perspective's*, Pergamon, Sydney, 1988, p. 107.

⁴ Stephens, *Going Solo*, p. 314.

during deployments may also have antagonised Army opinion and created an impression that RAAF 'didn't know how to operate in the field'.¹ There were also shortcomings in the training of RAAF helicopter pilots, who were not provided formal instruction in Army concepts of land warfare; however, once on the squadron, regular training exercises with the Army ensured that helicopter pilots soon acquired the necessary level of knowledge. Indeed, it has been claimed that RAAF helicopter pilots who spent a major portion of their career in the Army support role became the ADF's experts in airmobile operations.²

By the 1980s, Army support had become accepted as the primary task for RAAF helicopters, but they were also involved in a wide range of other operations, including assisting in national emergencies and maintaining a detachment in support of the Multi-National Force in the Sinai Desert. By the mid-1980s there was general recognition that a new utility helicopter was needed to meet the Army's operational requirements for battlefield support. This led to the Department of Defence initiating the procurement of Sikorsky S-70A Blackhawks for the RAAF in 1984, primarily to meet the Army's requirements for battlefield mobility. As the Service responsible for operating and supporting the aircraft, the RAAF set down most of the detailed specifications for the aircraft, specifying a much higher level of sophistication for the helicopters than the UH-60A Blackhawk then in service with the US Army.³ However, there were significant shortcomings in the acquisition process, notably in the ordering of spares and the estimation of support costs.⁴

Meanwhile, the Army's fleet of helicopters had increased to include three squadrons of Bell 206 Kiowas (OH-58 in US service), which, along with a number of fixed-wing aircraft, formed the 1st Aviation Regiment.⁵ In contrast to RAAF helicopter squadrons, these aircraft were closely integrated with Army field units and were based with the units they were assigned to support. In addition to the 1st Aviation Regiment, Army aviation also included a headquarters, a training school and base support squadron, all based at the Army Aviation Centre in Oakey. The RAAF continued to provide basic flying instruction for Army pilots and much of the engineering support for Army Aviation, including setting the technical, maintenance and safety standards for helicopter operations.⁶ The Centre, which had been formed in 1969, provided a focus for Army aviation and had the potential to form the nucleus around which the Army could build a case for assuming ownership of the RAAF helicopters; the opportunity arose in 1986 following a review of Australia's defence capabilities.

Transfer of Ownership

In 1986, the Minister for Defence, Mr Kim Beazley, announced that control, but not ownership, of battlefield helicopters would be transferred progressively from the RAAF to the Army over the ensuing five years.⁷ The decision followed a review of the

¹ See comments by Air Vice-Marshal I.B. Gration, in Ball (Ed), *Air Power*, pp. 470-471.

² Air Marshal David Evans, *A Fatal Rivalry: Australia's Defence at Risk*, MacMillan, Melbourne, 1990, p. 114.

³ John Bennet, 'A25 – Sikorsky S-70A Blackhawk', *Australian Aviation*, April 1995, pp. 45-47.

⁴ Anthony A.P. Earnshaw, *The Acquisition of Major Capital Equipment by the Australian Department of Defence: A Comparative Analysis*, thesis submitted for the degree of Doctor of Philosophy of the University of Canberra, January 1994, pp. 116-156.

⁵ 'Unit Profiles', *Army Aviation Centre: Home of the Australian Army Aviation Corps*, Information pamphlet produced by Australian Army Aviation Centre, Oakey Queensland, p. 10.

⁶ Rick Collins, 'The Air Cavalry Sioux', *Aircraft*, January 1971, p. 34.

⁷ Parnell and Boughton, *Flypast*, p. 343.

Australia's defence capabilities commissioned by the Australian Government and carried out by Mr Paul Dibb, a civilian academic.¹ Among its wide-ranging conclusions, Dibb's report included the following recommendation:

Combat efficiency may be enhanced if ground force tactical helicopters and their crews were operationally part of the Army. The review considers that its recommendation to enhance the helicopter lift capability for the Army provides a suitable opportunity to integrate the helicopter element into the Army structure.²

It is not clear what evidence was used to support this conclusion. Earlier, a committee established to investigate the matter had concluded that the transfer could not be justified and recommended that the Air Force should remain responsible for operating troop-lift helicopters.³ Nonetheless, Dibb's proposal to transfer the helicopters from the RAAF to the Army was accepted. Air Marshal Evans, a former Chief of the Air Staff, has claimed that move was initiated by the then Chief of the General Staff, with support from the Chief of the Defence Force (also an Army officer at the time). Evans is vitriolic in his condemnation of the decision and accuses the Army chiefs of seriously damaging inter-Service relations.⁴ The decision to transfer the helicopters does seem to be have been an extreme reaction to resolving any shortcomings in command and control arrangements, which could have been addressed with far less draconian measures. Moreover, it seems that by the time the decision was made, the RAAF had acquired a high level of expertise in its helicopter operations, and was highly regarded for its support to Army operations.⁵ It could be that senior Army officers were driven more by their own experiences some 20 years earlier than by contemporary concerns. Because the transfer coincided with the introduction of a new type of helicopter, it is not possible to assess objectively whether it produced any positive outcomes. However, at the very least, it was likely to have been severely prejudicial to creating an environment of harmonious working relations between the Services. Air Marshal Evans claims that the transfer created an atmosphere of dislike, distrust and disdain between the Services, while the RAAF Historian believes it traumatised some senior levels in the RAAF.⁶

The transfer led to a rapid expansion of Army Aviation, which formed the 5th Aviation Regiment at RAAF Base Townsville in northern Queensland to take control of the Blackhawks and some of the ex-RAAF Iroquois. The remainder of the Iroquois were transferred to the 1st Aviation Regiment and the School of Army Aviation at Oakey. To cope with its increased role, the School of Army Aviation was also expanded, and in 1990 the RAAF helicopter training squadron was disbanded to form the ADF Helicopter School, operating Aerospatiale AS-350 Squirrel helicopters, responsible for training Army and RAN aircrew.

An apparent inconsistency in the plan to transfer ownership of helicopters was the decision to retain Chinooks in service with the RAAF, thereby maintaining a division between the Services in the operation of battlefield helicopters. In the event,

¹ Paul Dibb, *Review of Australia's Defence Capabilities*, Australian Government Printing Service, Canberra, 1986.

² Dibb, summarising 'Review of Australia's Defence Capabilities', in Ball (Ed), *Air Power - Global developments and Australian perspective's*, p. 34.

³ Evans, *A Fatal Rivalry*, p. 117.

⁴ *Ibid.*, p. 116.

⁵ RAAF helicopter support for the Army during exercise Kangaroo '86 (the ADF's major biennial joint exercise) drew praise from the CGS, CDF and the Minister for Defence, *Ibid.*, p. 120.

⁶ Stephens, *Going Solo*, p. 296; and Evans, *A Fatal Rivalry*, p. 121.

however, in 1989 the Defence department agreed to a RAAF proposal to discontinue operating Chinooks as an economy measure. However, their absence was keenly felt, especially during exercises and it was later decided to return a limited number of Chinooks to service. By the time the Chinooks returned to service, RAAF expertise in their operation had been dissipated and consequently the aircraft were assigned to the Army. Four Chinooks were established as part of 5th Aviation Regiment in 1995, with a further two ordered for delivery in 1998.¹

The process of transfer created a number of challenges, not least the training of sufficient Army pilots. Although some RAAF aircrew and technicians remained with the Army during the early transition period, few RAAF personnel chose to transfer to the Army, resulting in a loss of valuable experience. To provide sufficient pilots, the Army recruited officers on short service commissions to be employed specifically in flying duties; however, the retention rate of these pilots was not high and continued to present the Army with a significant training burden. Initially, the Army considered employing senior non-commissioned officers and warrant officers as pilots, whom, it was assumed, would be less expensive to employ than officer pilots; however, this plan was soon abandoned on the grounds of impracticability.²

One of the problems for a relatively small aviation force like that of the Australian Army is that its aircrew operate in a narrow specialisation. Additionally, a small aviation force is less well placed to absorb fluctuations in the availability of suitably trained personnel. In a larger flying organisation such as the RAAF, aircrew are able to move between roles, which encourages the cross pollination of techniques and knowledge. From the RAAF's perspective, the loss of helicopter pilots from its pool of aviators reduced some of its flexibility to re-role aircrew, a facility that proved useful during the Vietnam War when there was a rapid expansion in the helicopter fleet. In a force the size of the ADF, there would appear to be benefits in considering personnel with specialist skills, such as aircrew and aircraft technicians, as ADF assets, available for employment across the Services.

There were also serious discontinuities in the logistic support arrangements associated with the transfer. The RAAF remained responsible for the provision of logistic support, but there seems to have been inadequate management of the process, with, for example, the spares provisioning not matching the Army's flying rate. The lack of adequate budgeting arrangements between the RAAF and the Army for Blackhawk spares may have compounded the problem, for while the RAAF was responsible for resourcing and provisioning spares for Army aircraft, the Army had no visibility of the RAAF's expenditure or control over allocations. Managing logistic support for new aircraft can often be a difficult process, especially across two Services, but the atmosphere of soured inter-Service relations would certainly not have helped matters. In the harsh Australian conditions, Blackhawks suffered a significant number of technical problems, including airframe cracking and higher than expected component usage.³ This led to an inadequate inventory of spare parts, some of which required long-lead times for delivery, resulting in prolonged aircraft down times for maintenance. This in turn led to a reduction in aircraft availability, a situation brought to the fore during Exercise Kangaroo '95, when only five out of 28 Blackhawks in 5th Aviation Regiment were available.⁴ At one stage during 1995, 24 of the Regiment's

¹ Gerald Fawley, 'Army Aviation Into the Future', *Australian Aviation*, March 1995, p. 26.

² Evans, *A Fatal Rivalry*, p. 121.

³ Barney O'Shea, 'Rotor Roundup At Kangaroo 95', *Rotor and Wing*, Vol. 30, No. 3, March 1996, p. 36.

⁴ *Ibid.* p. 34.

Blackhawks were reported to be unserviceable.¹ The shortage of serviceable Blackhawks seriously prejudiced the ability of Army pilots to retain flying currency and complete their operational work-up training. Nevertheless, it appears that despite the difficulties, Army pilots continued to conduct highly demanding training exercises.² However, the degree to which this can be attributable to a 'can do' spirit in the Army can only be conjecture.

In June 1996 two Army Blackhawks collided during a night training exercise involving the SAS, resulting in the death of 18 soldiers. In addition to the immediate causes of the accident, a Board of Inquiry also identified a number of systemic and equipment issues as contributory factors. In a statement on the accident, the Minister for Defence chose to highlight a lack of flying experience among Blackhawk pilots as a 'major contributory cause', although this was identified as only one of 26 contributory causes by the Board.³ The lack of experience was attributed to a high rate of unserviceability in the two years leading up to the accident, and the high pilot separation rates over a similar period, eroding the bank of experience at the 5th Aviation Regiment. The lack of experience of Blackhawk pilots became the focus of considerable media attention, even though the majority of the pilots involved in the accident were highly experienced and among the most current in the Regiment.

Nonetheless, it also seems fair to question whether senior Army officers had sufficient intimate knowledge of air operations to judge whether the planned exercises were safe. In air forces, air experience and knowledge is a fundamental aspect of command and supervision, right up to very senior positions. In the Army, where aviators fill only a very small proportion of appointments at senior levels, such knowledge can only be largely theoretical. Officers with a non-flying background cannot be expected to appreciate fully the intricacies of the risk associated with aviation, which makes it difficult for them to spot the telltale signs that all may not be well. This places aviation commanders in the invidious position of having to explain to their superiors why the job cannot be done for what might seem like relatively trivial reasons and risk being perceived as lacking the tenacity to 'get on with the job'.⁴ Such an arrangement can be made to work, but depends on the integrity of the subordinate commander and adequate support from the senior commander. In this case, according to media reports at least, aviation commanders did advise their superiors of their concerns regarding the currency and proficiency of their pilots in the weeks preceding the accident. While there has been considerable media speculation as to what action senior Army commanders took in response to these reports, any such action would inevitably have had to have been more dependent on staff advice rather than personal experience.⁵

In the aftermath of the inquiry, a number of measures were taken to reduce the risk of similar accidents, including measures to reduce pilot separation and establishing an overarching Defence Force Flying Safety Authority under the Chief of Air Force.⁶

¹ 'Black mark hanging over Blackhawks', *Canberra Times*, 22 April 1995, p. C5.

² ABC Television documentary on the Blackhawk accident, 'Where does the Buck Stop?',

⁴ *Corners*, ABC Television, 24 March 1997.

³ The Hon Ian McLachlan, 'Outcome of the Board of Inquiry into the Blackhawk Training Accident of 12 June 1996', *Ministerial Statement*, Parliament House, Canberra, 6 March 1997.

⁴ This theme is also set out by Norman Lee in 'Blackhawk Inquiry Finds Fatal Accident Inevitable', *Australian Aviation*, No. 128, May 1997, p. 23.

⁵ A Restricted Minute sent to the Army's Land Commander detailing shortcomings in the currency of 5th Aviation Regiment pilots was cited in an ABC television documentary on the Blackhawk accident, 'Where does the Buck Stop?', *4 Corners*, ABC Television, 24 March 1997.

⁶ The Hon. Ian McLachlan, *Ministerial Statement*.

Nonetheless, there remain serious challenges for Australian Army Aviation in maintaining the necessary high level of aviation expertise in a relatively small force.

CURRENT STRUCTURE OF AUSTRALIAN ARMY AVIATION

Army Aviation is equipped to provide Australia's ground forces with tactical air mobility, surveillance and reconnaissance, and limited aerial fire support. Operational units are organised into the 1st Aviation Regiment, comprising two squadrons of Kiowas and a squadron of Iroquois in the liaison and casualty/aeromedical evacuation role, and the 5th Aviation Regiment comprising two squadrons of Blackhawks and one mixed squadron of Iroquois gunships and Chinooks. In addition, Army Aviation includes a number of training and support organisations, all brought under the control of the Aviation Support Group. The organisation of Army Aviation within the ADF is shown diagrammatically at Figure 5.1 and outlined below.

Aviation Support Group¹

The Aviation Support Group was formed to bring together the various processes and staff functions associated with supporting Army Aviation. It is commanded by a brigadier who is responsible for, *inter alia*, policy advice, technical control, logistics and training associated with Army Aviation. The Aviation Support Group is under the command of the Chief of Army (formerly CGS), but is responsive to the Deputy Chief of Army, Land Commander Australia, and the GOC Training Command (Army). The Group's units include a headquarters element, an air traffic control section, and an aviation workshop. While the ADF Helicopter School, the School of Army Aviation and the Aviation Maintenance School are under direct command of the GOC Training Command (Army), they come under the Aviation Support Group for coordination of individual aviation training requirements. To fulfil this function, the commander of the Aviation Support Group is supported by the commander of Aviation Training, who is responsible to GOC Training Command for coordination of individual aviation training capability. While it might seem more logical for the Group to take full command of these units, the arrangement appears to work satisfactorily and there is no compelling requirement for change.

¹ DCGS Directive 34/95, *Establishment of the Aviation Support Group*, Office of the Chief of the General Staff, Canberra, 7 December 1995.

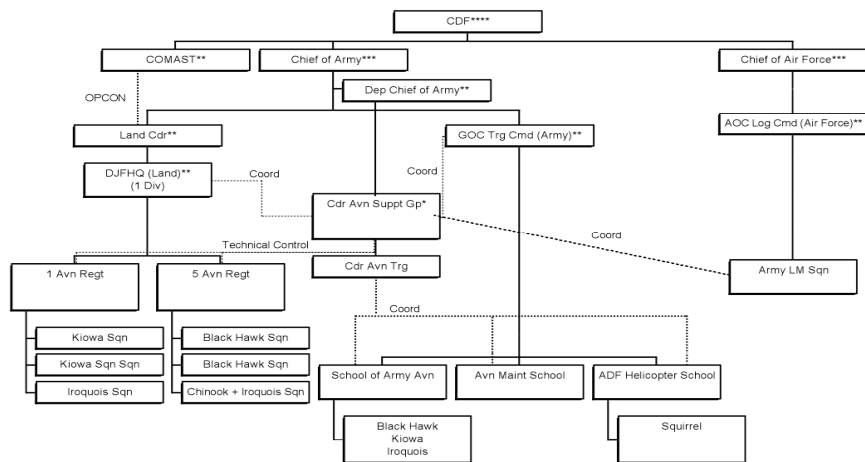


Figure 5.1: Organisation of Australian Army Aviation

One of the Group's key responsibilities is for Technical Control of Army aircraft and coordinating aircraft logistic requirements. The function of Technical Control includes responsibility for operational airworthiness of aircraft, aircrew categorisation, regulations concerning carriage of passengers and cargo, and operational health and safety matters. The Group also sets Army requirements and priorities for aviation logistic support, although aircraft technical airworthiness is the responsibility of the RAAF. The RAAF also provides logistic management using Single Service Logistic Management principles and procedures.¹ These include management of aircraft, deeper maintenance and repair, allotment of aircraft to units and the provisioning and supply of aircraft spares. While the Aviation Support Group manages most aspects of Army Aviation, it does not command the operational aviation regiments.

Aviation Regiments

The aviation regiments are under the command of the Land Commander Australia and assigned to the Deployable Joint Force Headquarters (Land), (DJFHQ (L)), formerly the Headquarters 1st Division. The 5th Aviation Regiment comprises two squadrons of 12 Blackhawks each, a squadron of four Iroquois gunships and four Chinooks, as well as a regimental headquarters. It is based at RAAF Townsville in northern Queensland, close to the headquarters of the 3rd Brigade, which is the Army's 'ready' brigade, maintained at a high state of readiness for operations at short notice. The Brigade provides some administrative support for the Regiment, but does not routinely have tasking authority over the Regiment's helicopters, which it bids for through the DJFHQ (L).²

The 1st Aviation Regiment has its headquarters at Oakey, alongside the Aviation Support Group. It comprises a regimental headquarters and four squadrons: the 161st Reconnaissance Squadron, which operates Kiowas and is based at RAAF Base Darwin in support of the 2nd Cavalry Regiment; the 162nd Reconnaissance Squadron, which also operates Kiowas and is based at RAAF Townsville in support of the 3rd Brigade; the 171st Operational Support Squadron, which operates Iroquois and is based at Oakey Airfield; and the 173rd Surveillance Squadron, which is also based at Oakey and operates leased fixed-wing aircraft in support of a range of Army operations.

Army Aviators

All Australian Army pilots are commissioned officers, serving on either general or short-service commissions. Blackhawks, Chinooks and Iroquois are also crewed by two loadmasters, who are usually non-commissioned officers permanently assigned to flying duties, although consideration has been given to employing some aircraft technicians in this role. Non-commissioned officers are also employed as aircrew observers on Kiowas. Officers are commissioned into the Aviation Corps after graduation from basic officer training at the Royal Military College Duntroon or the Australian Defence Force Academy.

¹ Single Service Logistic Management is a principle whereby one of the Services provides the prime management responsibility for the provision of a logistics supply item or service used by two or all of the Services. David Pasfield, *A Critical Dependence: Providing Logistic Support to Air Operations*, Air Power Studies Centre, Canberra, 1996, p. 93.

² Interviews by author with members of the 5th Aviation Regiment, 15 August 1997.

An intriguing aspect of the Australian Army corps and regimental system is that general service officers do not select their corps or regiment before joining the Army and are only appointed on completion of their officer training. This reinforces the 'soldiers first' ethos, but potential recruits wishing to join the Army for a career as general service officers in the aviation branch must take a gamble on being selected for the aviation corps. Short service officers on the other hand are recruited directly into the Aviation Corps and complete a relatively short course of officer training before undergoing pilot training. Apocryphal evidence suggests that the success rate of short service officers during pilot training is much higher than that of general service officers, creating an imbalance in aviation regiments. Whether or not this is the case, wastage rates in the aviation branch have been high and it has been necessary to offer short service officers extensions to their service. Since short service officers are recruited directly into the Aviation Corps and spend most of their careers in flying appointments, it is difficult to see how these pilots might be expected to have a greater intimate knowledge of land operations than their Air Force counterparts who previously flew helicopters. Perhaps the Australian Army has discovered that the demands of flying are such that it requires professional aviators to conduct it safely and effectively.

Operational Command and Control¹

During operations, units of Land Command would normally be assigned to the joint Commander Australian Theatre. Aviation units and sub-units would normally be allotted to an appropriate land component commander under Operational Command, Operational Control or Tactical Control.² Essentially there are two methods of employing aviation. The normal method is for units to bid for aviation tasks through their chain of command to the Tactical Air Control Party (TACP) at the formation headquarters. The TACP then processes bids, coordinates airspace utilisation and issues tasks to aviation units. The alternative method is for the formation commander to assign specific missions to the aviation commander in much the same way he would task ground manoeuvre elements using the Army principles of Directive Control.³ Under these arrangements aviation assets can be assigned to specific units under the appropriate level of command, although it would be unusual for units below formation (ie. brigade) level to be allocated aviation under Operational Command.⁴ With more than one agency responsible for tasking the helicopters, these arrangements appear to violate the air power principle of maintaining a single manager for air operations. This could result in conflicting tasks and confusion at unit level if, for example, the TACP is not made aware of which aviation assets have been assigned to support the missions tasked directly by the formation commander.

¹ Interviews by author with Lieutenant Colonel N. Cognet, Staff Officer 1 (Aviation), Headquarters Deployable Joint Force Headquarters, 21 August 1997.

² The definitions of Operational Command, Operational Control and Tactical Control are similar in ADF Doctrine to NATO definitions. Australian Defence Force Publication (ADFP) 1, *Doctrine*, Edition 1, 30 November 1993, Glossary, p. 7-8.

³ Directive Control is a philosophy of command and a system for conducting operations in which subordinates are given clear direction by the superior on his intentions - that is the result required, a task, the resources and any constraints. It includes the freedom to decide how to achieve the required result and is similar to the British Army's concept of Mission Command. ADFP 1, Glossary.

⁴ Draft Standard Operating Procedure (SOP), *SOP 148: Aviation Support*, DJFHQ(L), 16 June 1997.

Army Aviation into the Future

In 1997, the Australian Army embarked on a major programme to restructure the Army for the 21st century following a review directed by the Australian Defence Force Headquarters.¹ An operational concept based on an enhanced combat force has been developed with an emphasis on maximum use on new technologies, including the use of helicopters to enhance mobility. The structure is based on establishing a number of task forces, each assigned a specific region of northern Australia. The task forces are based on existing brigades and comprise up to eight battalions providing surveillance, reconnaissance, protection, engineer, helicopter, and combat service support capabilities. The structure of a typical task force is shown at Figure 5.2. Several of the task forces will be assigned a multi-role aviation battalion comprising airmobile, combat service support, surveillance and reconnaissance assets as shown at Figure 5.3. It is also intended procure new helicopters under project Air 87 to provide increased reconnaissance and 'aerial fire' capabilities early in the next century.

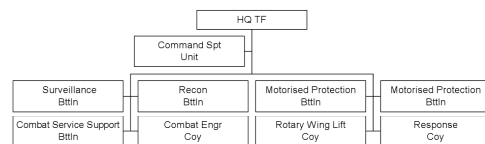


Figure 5.2: Typical Organisation of Australian Army Future Task Force²

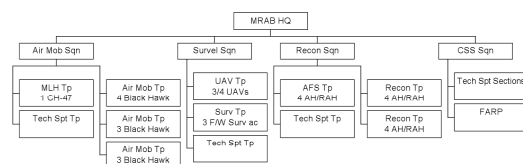


Figure 5.3: Outline Structure of Proposed Multi-Role Aviation Battalion

The proposed structure would decentralise aviation and potentially offers task forces highly responsive aviation assets. However, supporting such a decentralised aviation force will be extremely demanding, especially in terms of the number of

¹ Lieutenant General J.M. Sanderson, Chief of the Army, *An Australian Army for the 21st Century*, adfa.oz.au/DOD/SSA/C21ARMY/booklet.htm, accessed 1 September 1997.

² Source: *Restructuring The Australian Army*, Directorate of Publications and Visual Communications, Canberra, February 1997.

aircraft required and support costs. Moreover, dispersing aviation in such a manner risks dissipating its capability into ‘penny-packets’, incapable of massing sufficient fire power to impose decisive effects. Given the geography of northern Australia, centralising all helicopters would not be a practical proposition, since the range over which they may have to operate would significantly impair their responsiveness. However, whether Australia can afford to support the assets required to maintain such a decentralised structure has yet to be determined. It seems likely that some form of centralised structure will be maintained for peacetime, with the ability to transition to a decentralised structure for operations.

CONCLUSION

Differences of opinion over the command and control of air power have been a feature of aviation in Australia since the formation of RAAF in 1921; indeed even the creation of the RAAF as a separate Service was opposed by the then CGS. In its early years, the RAAF was explicitly subservient to the other two Services, but began to emerge as a significant force during World War II. Nonetheless, the RAAF remained the sole supplier of Australian air power until the RAN established its own Fleet Air Arm after the war, operating fixed-wing aircraft from its two aircraft carriers. Frustrated by what it saw as the RAAF’s lack of attention to its requirements, the Army later followed suit, establishing its own air arm in the late 1950s, albeit with continued support from the RAAF.

The first requirements for helicopters were established by the Army during World War II, but the war ended before the helicopters could be delivered and the order was cancelled. Later, the RAAF acquired a few S-51s, but plans to form a larger helicopter force and develop other roles for helicopters did not emerge for many years. It was not until 1962 that the RAAF gained a significant number of helicopters to support the Army, but even then their role was seen by the RAAF as mainly search and rescue. Meanwhile, Army aspirations for larger helicopters to improve its tactical mobility remained unfulfilled for many years, while the RAAF, responsible for their introduction to service at the time, was occupied with introducing sophisticated new fixed-wing aircraft into service. The failure of the RAAF to adequately address the Army’s requirements led to tensions between the Services. As the RAAF Historian has noted, the RAAF should have strived to support the Army in the way the Army wanted, not the way the RAAF found least troublesome. It was against this background that the first RAAF helicopters deployed to support the Army in Vietnam.

The RAAF appear to have been reluctant to deploy its helicopters to Vietnam, which were ill prepared for the task. Moreover, the terms under which the helicopters were to be used were severely circumscribed by the Air Staff, creating difficulties for commanders on the spot in trying to meet local requirements. Inappropriate command and control arrangements, combined with other factors, led to tensions between Army task force commanders and the RAAF, creating significant local difficulties. Nevertheless, despite their limited numbers, RAAF helicopters established a high reputation for their operations in Vietnam, but these achievements may have been overshadowed by shortcomings in command and control. The failure of the RAAF to deal with Army requirements for close air support and specifically its failure to acquire Cobra gunship helicopters also added to friction between the Services.

By the mid-1970s, the RAAF’s fleet of helicopters had grown to include 31 Iroquois and 12 Chinooks, all designated primarily in Army support roles. However,

although helicopters formed a significant force within the RAAF, they failed to gain significant advocacy at senior levels. Meanwhile, shortcomings in the command and control of RAAF helicopters deployed to support Army exercises may have added to the frustration felt by Army commanders, a situation not helped by the attitude of some RAAF pilots. Nonetheless, RAAF pilots gained considerable expertise in the operation of helicopters, supporting a wide range of operations in addition to the Army support task.

Meanwhile, Army aviation continued to grow, with establishment of the 1st Aviation Regiment in 1966, followed by the Army Aviation Corps in 1968 and a new Army Aviation Centre in 1969. Army aircraft were closely integrated with Army field units and were based with the units they were assigned to support. However, the RAAF continued to provide basic flying instruction for Army pilots and much of the engineering support for Army Aviation.

In 1984 the Department of Defence initiated procurement of Sikorsky S-70A Blackhawks for the RAAF, primarily to meet the Army's requirements for battlefield mobility. RAAF specifications called for a high level of sophistication for these helicopters, but there were significant shortcomings in the acquisition process, notably in the ordering of spares and the estimation of support costs.

Following a review of Australia's defence requirements, in 1986 it was decided to transfer control of Iroquois and the new Blackhawks from the RAAF to the Army, ostensibly to improve combat efficiency. The recommendation ran counter to earlier studies into the transfer of ownership, which found that the costs of moving the helicopters from one Service to another could not be justified. It seems likely that the move was motivated at least in part by earlier shortcomings in the support provided by the RAAF. Nonetheless, it is hard to see how the move might have been expected to improve inter-Service relations and joint cooperation.

Army Aviation expanded rapidly to absorb the new aircraft, establishing a second aviation regiment. Rotary-wing pilot training was also transferred from the RAAF with the establishment of the ADF Helicopter School. Initially, it was intended to retain the Chinooks in the RAAF, but in 1989 they were retired as an economy measure. However, it was soon found necessary to re-establish the capability and in 1995, four Chinooks were returned to service, but this time with the Army.

The transfer and expansion of Army Aviation created a number of difficulties, especially in the coordination of logistic support and in the training and retention of Army pilots. Shortages led to a reduction in the availability of Blackhawks, which became most acute during 1995. This led to erosion of experience and skill levels amongst Blackhawk pilots, who were nevertheless required to conduct demanding exercises. Lack of currency was highlighted as a major contributory factor behind the collision of two Army Blackhawks during a night training exercise in 1996, even though this may not have been a significant factor.

Australian experience with the command and control of battlefield helicopters has not been a happy one, marked by bitter inter-Service disputes that detracted from the ability of helicopters to achieve their full level of operational capability. Closer integration of the ADF and improved support structures should mitigate these problems in the future. Nevertheless, as a relatively small force, Australian Army Aviation faces significant challenges in maintaining a high level of aviation expertise.

CHAPTER SIX

US ARMY AVIATION

Like all novices (in our childhood), we began with the helicopter but soon saw it had no future and dropped it.

Wilbur Wright¹

INTRODUCTION

The US Army operates one of the largest fleets of aircraft in the world and the size of its helicopter forces dwarf those of other nations. This has significant limitations on the applicability of its structure to the military forces of smaller nations, especially any using the US Army as a benchmark. In particular, the size of US Army Aviation offers economies of scale that cannot be matched by most armies around the world. Nonetheless, since it is likely that the US will often be the senior coalition partner in many future operations involving British forces, a degree of commonality in organisational structure might permit more seamless integration. It is therefore useful to examine the structure and command and control arrangements of US Army Aviation to see where comparisons might be drawn.

To understand the current structure of US Army Aviation, it is necessary to consider its evolution. Accordingly, this chapter first examines how US Army Aviation evolved and provides an insight into the process of centralisation/decentralisation as the US Army adapted to new circumstances. Next, the current structure of US Army Aviation is considered, identifying the consequences of the latest initiatives to restructure the organisation, and examining doctrine for command and control of aviation assets. Finally, the possible impact on aviation of US Army plans for the future is briefly considered.

EVOLUTION OF US ARMY AVIATION

Early Evolution

The Army Aviation branch of the US Army can trace its origins to the acceptance of 'U.S. Army Aeroplane Number One' from the Wright Brothers on 30 July 1909. Aircraft were first employed in the US Army as part of the Signals Corps, but, as the potential for the wider application of air power became realised, a separate Army Air Corps was established. Friction emerged between those who saw the basic mission of air power as supporting ground troops and those who saw an independent role for air power. By 1942, the United States Army Air Forces (USAAF), which remained part of the Army Department, had been established with almost exclusive control of all Army

¹ *Wilbur Wright, 1909*, quoted by Richard E. Gardner and Reginald Longstaff in *British Service Helicopters*, Robert Hale, London, 1985, p. 4.

aircraft.¹ However, there was conflict between the USAAF, which sought to utilise aircraft under centralised, unified control and some ground forces, especially artillery units, which wanted the aircraft under their own control. Dissatisfied with the support provided by the USAAF, the ground forces formed organic Army Aviation units equipped with light aircraft. The official task of these aircraft was limited to artillery spotting but perhaps inevitably, they became involved in other roles such as liaison tasks and transporting senior officers.²

Helicopters were used by the USAAF for casualty evacuation tasks during operations in Burma in the closing stages of World War II as an adjunct to fixed-wing aircraft operations. The ability of the helicopter to hover provided unique capabilities in the jungle environment. By the end of the war, the USAAF had acquired over 400 Sikorsky R-4 and R-6 helicopters to perform a variety of light aviation tasks.

Post-War Years

After the war, the USAAF became part of the United States Air Force (USAF) under the provisions of the National Security Act of 1947. Although the USAF retained responsibility for air support to ground forces, it concentrated almost exclusively on strategic aerial warfare.³ Many in the Army became concerned about the willingness of the Air Force to provide air support to ground forces. The Army continued to operate light aircraft, and to compensate for perceived deficiencies in Air Force support, began considering the acquisition of larger aircraft such as the DeHavilland CV-2 Caribou. The Air Force strongly objected to attempts by Army Aviation to expand in to what it saw as its domain of air power; however, it seemed less concerned to constrain the Army's use of helicopters, which at that stage it saw as peripheral to its main capabilities.⁴

Disagreements between the Services over their roles and missions were addressed through a long-running series of meetings and agreements throughout the late 1940s and early 1950s. In an agreement reached between the Chiefs of Staff at Key West, Florida in 1948, specific roles and missions were assigned to each Service, in effect, marking out their domain. However, because common technical means (eg. aircraft) could be employed to achieve the various roles, each Service developed overlapping capabilities. To prevent the Army encroaching on the Air Forces domain of air power, Army aircraft were initially restricted to a gross weight of no more than 4,000 pounds; the weight limit was later relaxed to 20,000 pounds for helicopters, but only 5,000 pounds for fixed-wing aircraft.⁵ The USAF was assigned the search and rescue role, and to fulfil these tasks acquired Sikorsky H-5 helicopters (a modified version of the S-51), while Army Aviation operated the H-13 (Bell 47) for its organic utility and liaison tasks. Meanwhile, the United States Marine Corps (USMC) acquired HO3Ss (S-51s) and HTL-4s (Bell-47) for use during amphibious operations.⁶ In

¹ Frederic A. Bergerson, *The Army Gets an Air Force*, Johns Hopkin University Press, Baltimore, 1980, p. 27.

² *Ibid.*, pp. 29-32.

³ See Carl H. Builder, *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the US Air Force*, Transaction, New Brunswick, 1994, especially pp. 145-151.

⁴ See comments made by an unnamed Air Force General in 1950, quoted in James M. Gavin, *War and Peace in the Space Age*, Hutchinson, London, 1950, p. 114.

⁵ Bergerson, *The Army Gets an Air Force*, p. 55

⁶ John Everett-Heath, *Helicopters in Combat: The First Fifty Years*, Arms and Armour Press, London, 1992, p. 18.

addition to overlapping capabilities, there was considerable duplication of functions as each Service developed its own training and logistic support organisations.

Although helicopters saw brief service at the end of World War II, the first major military application of the helicopter was during the Korean War, when it was used in supporting roles such as medical evacuation by both the USAF and US Army. However, the USAF's interest in helicopters was decidedly limited, in stark contrast to the enthusiasm shown by some enthusiasts in the Army. Three of the most influential advocates were Generals Maxwell, Taylor, and Gavin, whose vision paved the way for the rapid growth of Army Aviation in the 1960s. In particular, an article published by General Gavin entitled 'Cavalry ... And I Don't Mean Horses' described the use of helicopters for tasks such as reconnaissance, screening exploitation and pursuit.¹ The following passage illustrates his visionary thinking:

Only by exploiting to the utmost the greatest potential of flight can we combine complete dispersion in the defense with the facility of rapidly massing for the counter-attack which today's and tomorrow's army must possess.²

In 1961, the US Secretary of State for Defence, Robert MacNamara called for a bold approach to restructuring the Army, declaring:

I shall be disappointed if the Army's re-examination merely produces logistically orientated recommendations to procure more of the same, rather than a plan of employment of fresh and perhaps unorthodox concepts which will give us a significant increase in mobility.³

To respond to the Secretary's call, the Army established a Tactical Mobility Requirements Board under the chairmanship of General Hamilton Howze, a cavalry officer and known advocate of helicopters. The board recommended the formation of five air assault divisions, similar in size to infantry divisions, but with armed helicopters replacing artillery, and transport aircraft and helicopters replacing ground vehicles. Additionally, the board also proposed the formation of three cavalry combat brigades equipped with anti-tank helicopters, and five air transport brigades equipped with both fixed-wing and rotary-wing aircraft. These proposals coincided with the US Army's adoption of the *Pentomic* divisional structure, designed to increase the survivability of armoured and infantry units on the atomic battlefield through greater dispersion. Air mobility enabled troops to be widely dispersed to reduce their vulnerability to nuclear attack, and then to be concentrated rapidly for defence or attack. Although MacNamara responded positively to the Howze Board proposals, he balked at the cost. Nonetheless, he tasked the Services with finding new ways to take full advantage of aviation. This led to the establishment in 1963 of the 11th Air Assault Division (Test) to conduct trials of the airmobile concept. At the same time that the trials were being conducted, the military situation in Vietnam was deteriorating, and the US military were becoming increasingly involved. Ultimately, this may have had more to do with the decision to proceed with an air assault division than the results of

¹ General James M. Gavin, 'Cavalry ... And I Don't mean Horses', *US Army Armour Journal*, Vol. 63, May/June 1954, pp. 18-22.

² Quoted in Everett-Heath, *Helicopters in Combat*, p. 23.

³ General John J. Tolson, *Vietnam Studies: Air Mobility 1961-1971*, Department of the Army, Washington DC, 1973, p. 4.

trials. In 1965, the 11th Air Assault Division (Test) was disbanded to form the 1st Cavalry Division (Air Assault).

Vietnam

Air mobility was not created to serve the needs of Vietnam, but rather to fight in high intensity conflict where it was thought battlefield nuclear weapons might be used. Nonetheless, the potential utility of airmobile units in the less dense battlefields of counter-insurgency wars was well recognised. It was not surprising, therefore, that the 1st Cavalry Division (Air Assault) was amongst the first major units to be deployed to Vietnam after the build up of American troops in 1965. Because of the way in which the US military presence in Vietnam evolved, command and control of forces in the theatre was far from straightforward. Military Assistance Command Vietnam (MACV) was established as an operational headquarters in 1962 under the command of General Westmoreland, who later appointed General Momyer, USAF, as deputy commander for air operations. Although the air deputy was responsible for most air operations over Vietnam, his authority specifically excluded control over Army helicopters and Marine aviation.¹ General Momyer believed there were shortcomings with this arrangement:

This absence of control was a problem throughout the war, for the large number of aircraft sorties and absolute necessity to counter enemy ground fire during helicopter assaults demanded unified planning and control. In fact, the demands for air support are greater during a helicopter assault than for a traditional airborne operation. In an airborne assault, the force is travelling at a much higher penetration speed with minimum exposure, and it has a higher degree of survivability compared to a helicopter assault.²

Against the backdrop of the Vietnam War, disagreements between the Army and the USAF over the provision of air power continued. However, in a compromise worked out in 1966, responsibility for fixed-wing transport aircraft was assigned to the USAF, while the Army assumed responsibility for all helicopters, except those used for search and rescue and special air warfare. This meant the Army had to surrender control of its CV-2 Caribou and CV-7 Buffalo transport aircraft, and the Air Force had to relinquish claims on Army rotary-wing aircraft.³ In giving up helicopters, however, it is likely that the Air Force thought it was merely conceding an airlift mission and did not foresee the development of armed and attack helicopters capable of fulfilling the close air support mission.⁴ Indeed, many in the Air Force later opposed the development of armed helicopters, concerned that they encroached on its close air support mission.⁵

¹ MACV Directive 95-4, *US Air Operations in Republic of Vietnam*, 28 June 1966, quoted in General William W. Momyer, *Air Power In Three Wars*, Government Printing Office, Washington DC, 1978, pp. 81-82.

² *Ibid.*, p. 81.

³ Agreement signed between Chief of the Army Staff (General Johnson) and Chief of the Air Staff (General McConnell) 6 April 1966, quoted in Robert Frank Futrell, *Ideas, Concepts, Doctrine (Vol. II): Basic Thinking of the United States Air Force 1961-1984*, Air University Press, Maxwell Air Force Base, Alabama, December 1989, p. 313.

⁴ Lieutenant Colonel Steven J. McNamara, *Air Power's Gordian Knot*, Air University Press, Maxwell Air Force Base, Alabama, 1994, p. 101.

⁵ General Momyer in US Congress, Senate Committee on Armed Services, Special Sub Committee on Close Air Support, *Hearings on Close Air Support*, 92nd Congress, 1st Session, US Government

Meanwhile, the organisation of Army helicopters continued to evolve during the Vietnam Conflict. In addition to operating with combat units, helicopters were used by a wide number of support units in Vietnam, such as medical, transport and artillery. However, each unit operated its helicopters independently and they lacked any centralised organisation to coordinate their use, leading to duplication of effort and inefficiencies. Consequently, the 1st Aviation Brigade was established to provide a centralised organisation to command all Army helicopter units in Vietnam, except those considered organic to the divisions (ie. the helicopters of 1st Cavalry Division and the aviation battalions within the infantry divisions). To some extent, this arrangement conflicted with the previous Army doctrine of decentralising control to the lowest practical level and was opposed by some within the Army; however, it enabled helicopters to be employed more effectively by subordinating them to where the need was greatest. To ensure that the helicopters continued to provide the necessary responsiveness, operational control remained with the supported ground commander.

The successful employment of helicopters in theatre led to an almost insatiable demand for more helicopters and airmobile units. In response to these demands, the 101st Airborne Division was reorganised to become another air assault division and was deployed to Vietnam in 1967. Another organisational innovation was the creation of air cavalry squadrons, which combined observation, attack and utility helicopters with infantry troops to find, fix and, in some cases, destroy the enemy. Air cavalry squadrons were so successful that one was attached to each division. The US Army had difficulty in meeting the demand for helicopter aircrew and technicians to meet the rapid expansion of its helicopter fleet, and by the end of 1967, the Army had only 12,800 pilots to fill 21,500 positions.¹ Unlike the Air Force and Marine Corps, which employed only commissioned officers as pilots, the Army also employed warrant officers in the role; indeed, the vast majority of Army pilots were warrant officers.

Given the large number of helicopters operating in the difficult conditions of the Vietnam War, it was inevitable that there would be losses, but the total of 4,869 helicopters lost is nonetheless quiet staggering. Almost half the losses were due to accidents, which probably reflects the rapid expansion the helicopter force, the intensity of the flying effort, and the difficult weather conditions and terrain in Vietnam.² However, despite the losses, helicopters were shown to be more survivable than some had postulated, with many aircraft receiving a large number of hits without being brought down; in 1967, for example, 1st Cavalry Division had 668 helicopters hit, of which just 36 were brought down.³

Employment of helicopters in Vietnam also led to the development of the armed helicopter as a major combat element of the US Army. The requirement for armed helicopters grew from the airmobile mission. Transport helicopters were especially vulnerable during landing and when disembarking troops, and were also frequently engaged by ground fire during transit. Initially, transport helicopters were armed with machine guns and later rockets to suppress enemy fire, but this

Printing Service, Washington DC, 1971, quoted in Matthew Allen, *Military Helicopter Doctrines of the Major Powers 1945-1992: Making decisions about Air-Land Warfare*, Greenwood Press, Westport, Connecticut, 1993, p. 22.

¹ Everett-Heath, *Helicopters in Combat*, p. 84.

² The US Army alone lost 4,321 helicopters in Vietnam; however, this figure has to be set against the enormous number of sorties flown in Theatre (36,150,000 during the period January 1966 to December 1973). Figures from Comptroller, Office of the Secretary of State for Defence, quoted in Everett-Heath, *Helicopters in Combat*, p. 111.

³ *Ibid.*, p. 111.

compromised their troop-carrying role. This led to the development of the AH-1 Cobra, which was quickly brought into operational service. However, it lacked the firepower of fixed-wing aircraft to deal with armour and hardened targets. Later, purpose built anti-tank weapons, such as the Tube-launched Optically-tracked Wire-guided (TOW) missile, were fitted and proved to be very effective.¹

The Vietnam War had a profound effect on the development of US Army Aviation. Not only was there a massive expansion in the number of helicopters it owned, but the range of its missions grew to encompass nearly all combat functions of the Army. By the end of the War, the US Army operated a fleet of nearly 10,000 helicopters, and Army Aviation had gained acceptance as a major combat capability. With the rapid growth in Army Aviation, many senior officers had become qualified helicopter pilots, ensuring that the culture of aviation was inculcated much more widely in the US Army than in many other armies in the world. Thus, Army Aviation emerged from Vietnam as a powerful force, both physically in terms of size and capability, and philosophically in terms of influence within the Army and Department of Defense.²

The 1970s: The Search for a New Doctrine

The failure of the US in Vietnam caused trauma within the US military. Despite its many tactical successes, the Army had suffered a 'miserable experience in Vietnam',³ and was left with a legacy of poor morale, substandard leadership and inadequate training.⁴ The Army needed a fundamental reorientation if it was to survive. It also had to cope with the new strategic guidance enunciated by President Nixon in what became known as the Guam Doctrine. In essence, the Guam Doctrine meant a move away from counter-insurgency type warfare, and a return to the emphasis on the defence of Western Europe against the threat of invasion by massed Soviet armies. As part of its post-war restructuring, the US Army formed a centralised Training and Doctrine Command (TRADOC) under the command of General William DePuy. To guide the Army into the new era, TRADOC published a revised version of the Army's capstone Field Manual (FM) 100-5, Operations, labelled 'Active Defense'.⁵

To find a role within the doctrinal framework of Active Defense, the focus for Army Aviation became the anti-tank mission. While this provided helicopters with an important role in the combined arms team, and gained broad support from within the army, it brought to a head the dispute with the USAF over the provision of close air support. The Army was concerned that, with the return to higher-intensity conflict, the USAF would concentrate on counter-air and strike missions at the expense of support to the Army. To fill the gap, the Army sought to expand the antitank capabilities of its helicopters; however, this move was opposed by the USAF, which argued that attack helicopters were vulnerable and 'low performing'. It also considered that they were a dispersion of air power and duplicated the function of its close air support aircraft.⁶

¹ See Everett-Heath, *Helicopters in Combat*, pp. 102-103.

² Allen, *Military Helicopter Doctrines of the Major Powers*, p. 10.

³ General Starry, quoted in Alvin and Heidi Toffler, *War and Anti-war: Survival at the Dawn of the 21st Century*, Little, Brown and Company, New York, 1993, p. 50.

⁴ For an account of the state of the US Army during the period, see Roger J. Spiller, 'In the Shadow of the Dragon: Doctrine and the US Army After Vietnam', in Jeffrey Grey & Peter Dennis (Ed.), *From Past to Future: The Australian Experience of Land/Air Operations*, proceedings of the Australian Army History Conference 1995, Australian Defence Force Academy, 1995, pp. 6-46.

⁵ FM 100-5, *Operations*, Department of the Army, Washington DC, 1976.

⁶ Allen, *Military Helicopter Doctrines of the Major Powers 1945-1992*, p. 10.

However, the Army argued that the role of the attack helicopters was to provide 'direct aerial fires' and did not duplicate the close air support role. It also stressed that, as they were fully integrated into the Army's organisation, attack helicopters could operate close to the frontline, where their support was more timely, responsive and accurate than fixed-wing close air support.

As if to emphasise the differences between USAF close air support and helicopter fire support, attack helicopters were integrated into field units at the lowest practical level. Accordingly, divisions were each allocated anti-tank helicopter companies, comprising attack and observation helicopters. Administratively, the helicopter companies were organised into aviation battalions, but operational control was decentralised with individual attack helicopter companies assigned to brigades or battalions to operate as part of the combined arms team. In addition, an experimental Air Cavalry Combat Brigade (ACCB) was established as a corps or army-level reserve for counter-penetration missions. The ACCB was later reformed as the 6th Cavalry Brigade (Air Combat), but remained the only air combat unit at the operational level during the era of Active Defense. To some, this 'penny packeting' of aviation meant the full potential of helicopters was not being exploited. Moreover, it ensured that the status of Army Aviation remained as a supporting branch. However, decentralisation consolidated the Army's claim over the USAF for the control of battlefield helicopters, and ensured support for aviation from within the Army. In practical terms though, the integration of helicopters with armoured and mechanised infantry units proved difficult, not least because of the very different operating characteristics of helicopters and armoured vehicles. During exercises, ground commanders found it difficult to employ attack helicopters effectively in their scheme of manoeuvre; consequently, despite the official doctrine, they were usually held in reserve to be used in case of an enemy breakthrough and employed in much the same way as close air support. General Starry, De Puy's successor at TRADOC, described a 'reluctance among other members of the combined arms teams to accept or recognise Army Aviation's combat capabilities'.¹ On the other hand, the role of utility and cargo helicopters in supplying the enormous logistic requirements of mechanised warfare became vital, leading to the programmes for improved utility and cargo helicopters.

There was also a need for an improved attack helicopter. The AH-1 Cobra, which had been introduced as a stopgap attack helicopter during the Vietnam War, lacked the anti-tank capability the Army required. The Army's planned replacement for the Cobra, the AH-56 Cheyenne, was cancelled due to cost over-runs and technical failures, leading to selection of the AH-64 Apache. At the same time, the USAF was introducing the A-10 Thunderbolt for the close air support mission. Under pressure from congress to reduce costs, trials were conducted to establish which aircraft best met the Army's need. The result of the trials was that, by operating together, the different characteristics of A-10s and AH-64s could be exploited to achieve synergy on the battlefield. In an unusual display of inter-service cooperation, both types were procured, leading to the concept of Joint Air Attack Teams (JAAT) involving attack helicopters, fixed-wing aircraft and ground combat elements.

The 1980s: The AirLand Battle Concept

When General Starry took command of TRADOC, he sought to advance the Army's doctrine to exploit more fully American technological superiority and introduce new

¹ General Starry, quoted in *Ibid.*, p. 19.

concepts in war fighting. This led to a revised edition of FM 100-5, *Operations*, entitled AirLand Battle, issued in the early 1980s.¹ The doctrine was a move away from the defensive, attrition based concepts of Active Defense, and introduced the concept of deep operations, in which Army formations would manoeuvre to fight in the enemy's rear area. Greater emphasis was placed on psychological factors such as morale, leadership and the will to fight. There was also a greater emphasis on the operational level of warfare involving divisional and corps-level action rather than individual battalion and brigade level battles.

The concept appeared to favour a return to the concepts of air mobility developed by Howze in the 1960s, with helicopters exploiting their superior mobility over land vehicles to conduct the deep attacks. However, although helicopter advocates seized upon AirLand Battle, the air component of AirLand referred primarily to the use of USAF fixed-wing aircraft in the interdiction role and not Army Aviation.² Fortunately for Army Aviation, the AH-64 Apache was brought into service at the same time as AirLand Battle was being implemented. Apaches, armed with long range Hellfire anti-tank missiles and equipped with advanced night flying, navigation and survivability equipment, gave the Army a weapons platform capable of fulfilling the missions envisioned in the new doctrine. Operating in conjunction with the upgraded reconnaissance helicopter, the OH-58D Kiowa Warrior, Apaches were capable of conducting missions beyond the forward line of their own troops and engaging targets in the enemy's rear area of operations. These operations also fitted well with the JAAT concepts developed earlier.

AirLand Battle doctrine also gave impetus to reviewing the disposition of aviation assets within the Army. Earlier, a programme known as *Aviation Requirements to Support the Combat Structure of the Army Study III (ARCSA III)* had seen the consolidation of aviation units into battalions, which were assigned to divisional headquarters and corps level aviation groups. However, while this arrangement offered the potential to increase the combat capability of aviation, it proved to be too unwieldy to control.³ To fix this problem, the US Army introduced the *Division 86* in the early 1980s, introducing the aviation brigade structure shown at Figure 6.1. The aviation brigades provided corps and division commanders with a coordinated aviation component, improving command and control, and allowing better use of resources.⁴ This structure was a significant landmark in the evolution of US Army Aviation, providing organisations and force structure equal to other combat arms. However, although this structure would have provided a capable force, it proved to be unaffordable.⁵

In the mid-1980s, the US Army initiated the *Army of Excellence (AOE)* programme, which increased the number of divisions in the Army, but reduced the number of aviation forces assigned to each division. This structure provided composite aviation battalions, each operating a large number of aircraft types, including Apaches, Cobras, Kiowas, Iroquois, Blackhawks and Chinooks.⁶ Aviation battalions were

¹ FM 100-5, *Operations*, Department of the Army, Washington DC, 1982.

² General Donn A. Starry, 'Extending the Battlefield', *Military Review*, Vol. 61, No. 3. March 1981, p. 47.

³ Lieutenant Colonel Rick Scales, 'Aviation Restructure Initiative – The Way to the Future', *US Army Aviation Digest*, September/October 1993, p. 15.

⁴ Major Albert R. Stewart, 'ACAB - Air Cavalry Attack Brigade', *Army Aviation Digest*, Vol. 26, [No. 7, July 1980, p. 6.

⁵ Scales, 'Aviation Restructure Initiative', p. 15.

⁶ Thomas M. Ring, 'United States Army Aviation: An Air Power Analysis (Part One)', *World Air Power Journal*, Vol. 27, Winter 1996, p. 129.

assigned to aviation brigades at division, corps or theatre-level, with their composition tailored to the mission of the assigned command. Army Aviation was finally established as a formal branch of the US Army in the 1980s. Several factors influenced the decision to establish aviation as a branch, but the main rationale was the need for improved training for aviators.¹ Previously, it was considered that officers in aviation needed a background in other branches, such as infantry or armour to develop their expertise in combined arms warfare. However, by establishing aviation as a separate branch, it was recognised that officers could specialise in aviation and subsequently learn combined arms techniques. Branch status also provided Army Aviation with a focus for the development of doctrine, organisation and training.

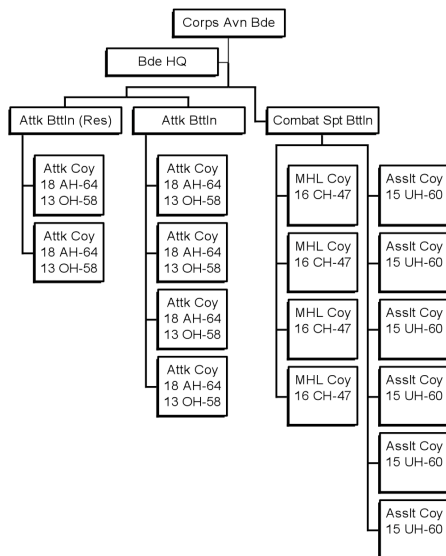


Figure 6.1: Division 86 Corps Aviation Brigade Structure²

¹ Major General Bobby J. Maddox, 'Army Aviation Branch Implementation', *Army Aviation Digest*, Vol. 29, No. 8, 1983, pp. 2-6.

² Source: Matthew Allen, *Military Helicopter Doctrines of the Major Powers 1945-1992*, p. 45.

Three episodes provided major tests of the command and control arrangements for battlefield helicopters in the US in the 1980s: Operation *Eagle Claw* in Iran in 1980, Operation *Urgent Fury* in Grenada in 1983, and Operation *Just Cause* in Panama in 1989. Operation *Eagle Claw* was mounted to rescue 53 Americans held hostage in the US Embassy in Teheran using US Special Force troops, USAF C-130 Hercules and Marine Corps RH-53 Sea Stallion helicopters. The mission ended in disaster when one of the RH-53s collided with a C-130 tanker at a remote site codenamed Desert One. Critics of the operation blamed inadequate planning, equipment and tactics, as well as poor leadership and a lack of inter-Service cooperation.¹ The incident led to major reforms in the management of Special Forces, and was probably a major factor behind the Army's forming a dedicated Special Operations Aviation (SOA) force, known initially as Task Force 160 (TF 160). At the same time, the USAF continued to develop its helicopter forces supporting Special Operations Forces, operating MH-53 Pave Low and MH-60 Pave Hawk helicopters. Although officially USAF and Army special operations helicopters offered complimentary capabilities, the arrangement provided an overlap of operational capability and duplication of functions.

Many Army helicopters saw their operational debut during Operation *Urgent Fury*, which was mounted ostensibly to rescue 'threatened' US citizens on the small Caribbean island of Grenada, but also to overthrow the Marxist government of General Austin. The US forces massively outnumbered the poorly equipped Grenadian defence forces and readily overwhelmed them; however, the operation was not without its problems and a number of important lessons were learned. In particular, the command and control arrangements were complex and inter-operability problems between the Services were again cited.² Helicopter survivability was also called into question after the operation, especially given that the Grenadian defence forces were equipped with only small arms and a few visually directed anti-aircraft guns. Of the 107 helicopters used in the operation, four were destroyed and five required depot level repair, a loss rate of approximately nine per cent.³ Most of the losses occurred during daylight assaults directly onto objectives, but at least two Army Blackhawks were lost due to pilot mishandling.⁴

Army Aviation played a major role in Operation *Just Cause* in Panama in 1989, mounted to oust the country's leader General Noriega. Helicopters were essential to the conduct of the operation, providing transport, surveillance, reconnaissance and fire support.⁵ The operation began with simultaneous night assaults on 26 objectives throughout Panama, with some helicopters flying direct from the US using air-to-air refuelling.⁶ Most of the helicopter assaults were coordinated with extensive fire support from USAF AC-130 gunships, attack helicopters or, in at

¹ Paul B. Ryan, *The Iranian Rescue Mission, Why it Failed*, Naval Institute Press, Annapolis, Maryland, 1985.

² Micheal E. Seitz, 'Command, Control, Communications and Intelligence (C³I) Factors' in Peter J. Tsouras and Bruce W. Watson, (Eds), *Operation Just Cause: the US Intervention in Panama 1991*, Westview Press, Boulder, Colorado, 1991, p. 105.

³ General John W. Vessey, written report to the Armed Services Committee of the US House of Representatives dated 6 June 1984, quoted in *Ibid.*, p. 357.

⁴ *Ibid.*, p. 358.

⁵ Noris Lyn McCall, 'Assessing the Role of Air Power' in Tsouras and Watson (Ed), *Operation Just Cause*, pp. 115-121.

⁶ Frank Colucci, 'Rehearsal Reaps Rewards', *Defence Helicopter World*, Vol. 9, No. 3, June-July 1990, p. 22.

least one case, F-117 stealth fighters.¹ Some of the Panamanian defence forces put up considerable resistance and there was extensive small arms and heavy machine gun anti-aircraft fire. Helicopters came under heaviest fire during daylight raids and when assaulting targets that had not been attacked with suppressive fire. Several Apaches and Blackhawks received numerous hits from small arms, mostly during daylight assaults, and although none was brought down, some crew members and passengers in Blackhawks were wounded.² Out of the 170 helicopters that took part in the operation, only three were shot-down (two AH/MH-6s and an OH-58); additionally, one AH-6 was brought down when its rotors became wrapped in an abandoned parachute. The fact that most helicopter operations took place at night may have accounted for the relatively low number of losses to hostile fire.³ Overall, the mission was considered highly successful and many of the inter-Service difficulties of earlier campaigns did not emerge as significant issues.

The 1991 Gulf War: AirLand Battle Tested

Within days of the Iraqi invasion of Kuwait on 2 August 1990, President Bush ordered US aircraft and troops to Saudi Arabia to help defend the country against further Iraqi advances. Attack helicopters of the 82nd Airborne Division were among the first American forces deployed and formed a vital part of the defence forces in Operation *Desert Shield*. In the build up that followed, over 2,000 US helicopters were deployed to the region. In accordance with US joint doctrine, command and control was divided into land, air, sea and special operations component commands. Most Army helicopters were assigned to units comprising the land component, except SOA aircraft, which were assigned to the Special Operations Command (SOC). While the Joint Force Air Component Commander (JFACC) had tasking authority over almost all fixed-wing aircraft in theatre, helicopters remained under organic control of Army, Marine and Special Operations Forces.

Desert Shield became *Desert Storm* when Apaches from 101st Airborne Division (Air Assault) fired the opening shots of the war on 16 January 1991. The Apaches were attached to the SOC for the operation, joining USAF MH-53 Pave Low helicopters to form Task Force Normandy. The Pave Lows were used to escort the Apaches towards their targets and to provide on-scene search and rescue cover.⁴ On the call 'Get some', the Apaches launched a salvo of Hellfire missiles to destroy a vital Iraqi command and control facility, clearing an ingress route for coalition fixed wing bombers to enter Iraq. Despite the success of the mission, it was one of the few occasions when helicopters were employed outside their organic control, and for the remainder of the air campaign, they were mostly held in reserve by Army units.⁵ Meanwhile, Army and Air Force special operations helicopters flew missions into

¹ John D. Morrocco, 'F-117A Fighter Used in Combat for First Time in Panama', *Aviation Week and Space Technology*, Vol. 132, No. 1, 1 January 1990, p. 32.

² Thomas Donnelly, Margaret Roth and Caleb Baker, *Operation Just Cause: The Storming of Panama*, Lexington Books, New York, 1991, pp. 222-226.

³ Colucci, 'Rehearsal Reaps Rewards', p. 23.

⁴ 'Night Stalkers in the Desert', Report on TF 160 in the Gulf War at <http://www.nightstalkers.com/HISTORY.HTM>, accessed 23 March 1997.

⁵ Apaches were used prior to the ground offensive for battle preparation missions such as reconnaissance and interdiction, but these missions were conducted on behalf of the land commanders; Stephen J. McNamara, *Airpower's Gordian Knot: Centralised versus Organic Control*, Air University Press, Maxwell Air Force Base, Alabama, August 1994, p. 129.

Iraq to rescue downed aircrew and insert Special Forces patrols to search for Scud missiles.¹

The US Army's concepts of AirLand battle were put into practice when the ground offensive began on 24 February. Reconnaissance and attack helicopters manoeuvred with armoured and mechanised forces in attacks on deployed Iraqi forces; meanwhile, fixed-wing aircraft, long-range rockets and artillery pounded Iraqi targets in depth. Transport and cargo helicopters provided logistic support to ground forces for the rapid advance. At times during the ground offensive the combination of thick smoke from burning oil wells and low cloud prevented fixed-wing aircraft from seeing their targets and attack helicopters were often the only means of providing close air support; they even ventured into the traditionally fixed-wing role of interdiction on occasions. In one raid deep into Iraqi held territory, 18 Apaches from the VIIth Corps' 11th Combat Aviation Brigade (CAB) were credited with the destruction of 157 tanks and 108 other vehicles and artillery pieces.² Deep attacks by divisional level combat aviation brigades on the other hand proved problematic, due to a lack of the necessary logistics, intelligence and fire support, which were only available at the corps level. Moreover, with their focus on fighting the close battle, divisional commanders were reluctant to commit their aviation assets to deep attack.³

In a bold move on the first day of the ground offensive, helicopters of the XVIII Airborne Corps, including 82nd and 101st Airborne Divisions, mounted the largest airmobile move in history. A force of over 100 Blackhawks, Chinooks and Iroquois, escorted by Kiowas, Apaches and Cobras, flew troops, vehicles, artillery and supplies forward, securing a base some 100 kilometres inside Iraq. From the forward operating base, Apaches flew forward to firing positions on the highway linking Kuwait to Bagdad, where they were able to pick off retreating Iraqi forces almost at will.⁴ Later assault helicopters inserted ground troops along the highway. It is perhaps notable that, while fixed-wing aircraft were able to interdict the highway, assault landings by helicopters were able to cut it off completely.⁵ However, the use of helicopters in this role highlighted tensions in US doctrine over the division of battlespace between the air component commander and surface commanders. After the War, Army commanders complained that they had been inhibited from striking targets within the reach of their attack helicopters because of procedural difficulties with the air tasking order issued by the JFACC.⁶ At the same time, Air Force commanders complained that air power had been constrained by the Army extending its area of operations into the area that should have remained under JFACC control.⁷

Allied helicopter losses during both Operation *Desert Shield* and *Desert Storm* were extremely light, with 28 lost due to accidents and just eight lost in combat. Despite operating deep within enemy held territory, only one Apache was lost in

¹ General Sir Peter de la Billiere, *Storm Command: A Personal Account of the Gulf War*, Harper Collins Publishers, London, 1992, p. 223.

² Everett-Heath, *Helicopters in Combat*, p. 40.

³ Allen, *Military Helicopter Doctrines of the Major Powers*, p. 39.

⁴ Brigadier General Robert H. Scales, Jr., *Certain Victory: United States Army in the Gulf War*, Office of the Chief of Staff United States Army, Washington, DC, 1993, p. 220.

⁵ *Ibid.*, p. 374.

⁶ *Ibid.*, p. 290.

⁷ Thomas A. Keaney and Eliot A. Cohen, *Gulf War Air Power Survey Summary Report*, Department of the Air Force, Washington DC, 1993, p. 157.

combat and its crew was recovered uninjured.¹ The Army's AirLand Battle doctrine had been put to the test and had not been found wanting.

The 1990s: The New World Order

In the early 1990s, US Army helicopters were used in a number of peace support and humanitarian missions, including Operation *Restore Hope* in Somalia and Operation *Provide Hope* in Northern Iraq. In Somalia, helicopters were used mainly in support of ground forces, including providing a quick reaction force to respond to incidents on the ground. Helicopters were frequently fired upon by rebel Somali forces, and on one occasion, two US Army Blackhawks supporting a Special Forces mission were shot down, precipitating the eventual withdrawal of US forces from Somalia.² US Army helicopters also took part in the operation to deliver relief supplies to Kurdish refugees in northern Iraq after they fled their homes in the aftermath of the Gulf War in early 1991.³ By October, the situation had stabilised and most of the Kurds returned to their homes. However, coalition military operations continued to police the area, with fixed-wing aircraft maintaining a 'no-fly' zone, and ground forces maintaining a presence in the security zone using US Army Blackhawks to transport them to and from the area. On 14 April 1994, two US Army Blackhawks operating in the security zone were shot-down by USAF F-15s patrolling the 'no-fly' zone. Although the investigation into the incident revealed a number of operator and technical failings, it also uncovered a series of systemic failures, especially in relation to command and control of the operation and the coordination of helicopter operations with other air activity. Specifically, there was a failure of the component organisations to integrate fully the Blackhawk flights with other air operations; over the period of the operation, fixed-wing and helicopter activities had developed into two essentially separate operations.⁴

Meanwhile, as the US Army began 'downsizing' in the post-Cold War era, aviation forces risked becoming too austere to support their missions. While the *Army of Excellence* (AOE) programme had proven its value during Operation *Desert Storm*, a series of disjointed reductions in personnel strengths had reduced the capacity of aviation units to meet their missions; in particular, there were significant shortfalls in the number of personnel available to support 24-hour operations.⁵ The aim of the reductions had been to create a 'lean and mean' organisation; however, a more realistic appraisal might have concluded that Army Aviation was in danger of suffering 'corporate anorexia'.⁶ Several initiatives were instigated to alleviate the deficiencies, leading in 1993 to the *Aviation Restructuring Initiative (ARI)*. Implementation of the ARI led to the current force structure of US Army Aviation.

¹ *Conduct of the Persian Gulf War*, Final Report to Congress, Appendix T, 'Performance of Selected Weapon Systems', April 1992, p. T-18.

² Jay E. Hines, 'A Brief History Of The United States Central Command', <http://ccfs.centcom.mil/images/centcom.gif>, accessed 30 March 1997.

³ Wing Commander R.A Forsythe, 'The Role of the Military in Disaster Relief', presentation to *The Support Helicopter Conference*, Church House, London, 15-16 April 1993.

⁴ Comments by General Andrus (who led the investigation), News Release, Office of Assistant Secretary of Defence (Public Affairs), *Helicopter Shootdown Report Released*, Washington DC, 13 July 1994, p. 8.

⁵ Scales, 'Aviation Restructure Initiative', p. 15.

⁶ The term 'corporate anorexia' is understood to mean that an organisation has become so focused on reducing its size that it can no longer function properly. The term was introduced to the author by Professor A. Kouzmin during a presentation at RAAF Command and Staff Course, February 1996.

CURRENT STRUCTURE OF US ARMY AVIATION

The objectives of the ARI were to fix AOE deficiencies, reduce logistics requirements, reduce costs, and retire old aircraft.¹ One of the principal changes under ARI is that most units were structured around one type of aircraft, rather than as composite units as had been the case under AOE. However, the foundation of the aviation structure remains the aviation brigade (AVN BDE), designated for employment at theatre, corps, and divisional-level.

Each aviation brigade contains combat, combat support and combat service support elements, as well as an aviation headquarters and headquarters company. Aviation brigades are self-contained entities comprising between three to five aviation battalions and are structured to the specific requirements of the assigned unit. Aviation brigades are roughly equivalent to USAF wings and are normally commanded by a colonel or brigadier general. Alternative nomenclature for units of similar size to aviation brigades includes aviation commands, groups and regiments. The command (COM) designation is commonly used for brigade-sized units that are tasked for combat support and combat service support functions. These include the aviation maintenance units assigned to a divisional support command (DISCOM) or corps support command (COSCOM). An aviation group (AVN GRP) normally comprises between one and three aviation battalions, and may or may not report to a brigade. At corps-level, aviation groups are assigned to the corps aviation brigade and normally command battalions assigned to specific roles, such as attack or combat support. The aviation component of the armoured cavalry regiment is the Regimental Aviation Squadron (RAS), which can operate as many as 60 aircraft.² Although the regiment (REGT) designation has been applied to some aviation groups, it is more commonly reserved for Armoured Cavalry Regiments (ACRs).

The level of command below the aviation brigade is the aviation battalion, which is normally commanded by a lieutenant colonel and roughly equates to a USAF squadron. Cavalry units of battalion size are normally designated as squadrons. Following ARI, most aviation battalions operate just one type of aircraft and are designed to fulfil specific functions. Battalions normally comprise a number of aviation companies of about eight aircraft commanded by a captain or major. The disposition of aviation units varies with the level and function of the organisation they support.

Aviation at Echelons Above Corps (Theatre-level)

Aviation units at the echelon above corps (EAC) are under the command of the theatre army commander, with the control authority normally delegated to the theatre operations staff in the headquarters. The theatre aviation brigade may be organised with attack/utility/cargo aviation assets and forces and is capable of conducting manoeuvre, combat support and combat service support functions. Following the drawdown of US forces from Europe, US Army Europe (7th Army) comprises only one corps (V Corps), but it still has a limited number of aviation assets held above corps level. These are limited to the general support function and include a number of detachments of mainly Iroquois and fixed-wing aircraft (eg. C-12 Super King Air). In

¹ Major Jerry K. Hill, 'Aviation Restructure Initiative – The Divisional Aviation Brigade', *US Army Aviation Digest*, November/December 1993, p. 46.

² Ring, 'United States Army Aviation', p. 132.

contrast, 8th US Army, which is the theatre army assigned to US forces Korea, has two aviation brigades at echelon above corps (6th Cavalry Brigade (Air Combat) and 17th Aviation Brigade), as well as a number of combat support and combat service support aviation units. 6th Cavalry Brigade (Air Combat) comprises two battalions each of 24 Apaches and provides a deep strike capability, while 17th Aviation brigade comprises mainly Blackhawks and Chinooks, providing assault, combat support and combat service support capabilities.

Aviation at Corps

At Corps level, aviation manoeuvre, combat support and combat service support is provided mainly by the corps aviation brigade. The corps aviation brigade normally includes an aviation group of mainly attack helicopters, which has the capability to conduct deep air manoeuvre operations. Additionally, some corps are assigned an armoured cavalry regiment (ACR), which has an organic regimental aviation squadron (RAS) providing surveillance and reconnaissance capabilities. Missions for aviation operations are passed from the corps operations staff to the corps aviation brigade, which, as a manoeuvre force, has the capability to exercise command and control over task-organised armour, infantry, artillery, air defence, and other support forces as necessary. Corps combat support and combat support assets are bid for by units and normally placed in general or direct support of subordinate units for the duration of the task.

A typical corps aviation brigade is 12 Aviation Brigade, which comprises two aviation groups (11th and 166th Aviation Regiments) assigned to V Corps. 11th Aviation Regiment comprises two attack battalions, each of 24 Apaches, while 166th Aviation Regiment includes one medium-lift battalion of 16 Chinooks and two assault companies of 15 Blackhawks, as well as an aviation command company of Blackhawks and C12s. In addition, V Corps is assigned a medical evacuation battalion of some 45 Blackhawks providing a significant casualty evacuation capability. The structure of aviation units in V Corps, including divisional aviation assets, is shown at Figure 6.2.

Aviation at Division

A divisional aviation brigade provides command and control for all aviation assets within the division. This arrangement enables priorities for the employment of valuable aviation assets to be established at divisional level and assigned to brigades and battalions according to their needs. While the divisional aviation brigade supports the division with firepower, combat support, and combat service support, unlike the corps aviation brigade, it is not considered a manoeuvre formation in its own right. Consequently, it is usually employed to enhance the capabilities of the ground manoeuvre brigades, although when properly augmented, it can be committed in a manoeuvre role for short periods.¹

¹ FM 1-100, *Doctrinal Principles for Army Aviation in Combat Operations*, 28 February 1989, p. 2-12.

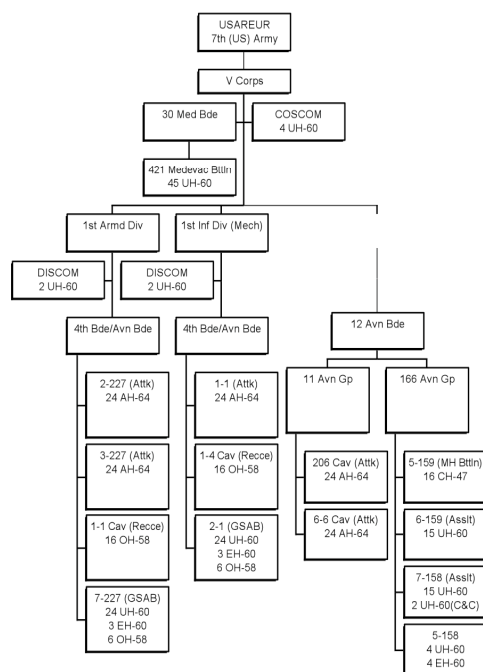


Figure 6.2: Army Aviation in V (US) Corps¹

The structure of divisional aviation brigades is tied to the function of the division, ie., heavy (mechanised), light, airborne or air assault. Heavy divisions are normally scaled for two attack battalions of 24 Apaches; however, due to resource constraints, only one attack battalion is currently fielded in most heavy divisions.² Aviation brigades in heavy divisions also include a cavalry squadron of 16 Cobras or Kiowas, and a general support aviation battalion of Blackhawks and Kiowas. In light

¹ Source: *World Air Power Journal*, Vol. 27, Winter 1997.

² Hill, 'Aviation Restructure Initiative', p. 46.

divisions, the attack battalion comprises 24 Cobras or Kiowa Warriors, while the reconnaissance squadron is similar to that in the heavy division. The aviation brigade in the light division also includes an assault battalion of about 40 Blackhawks and six Kiowas. The typical structure of the heavy and light divisional aviation brigades are shown at Figure 6.3.

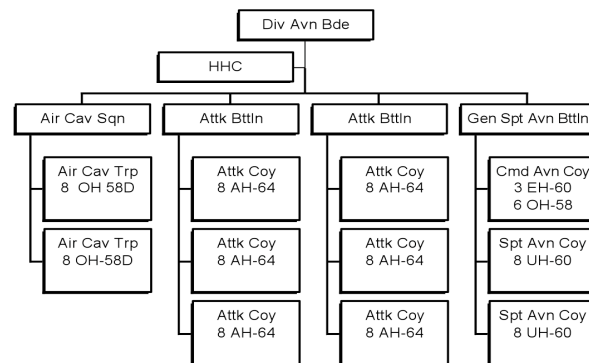


Figure 6.3: Typical Organisation of Aviation in a US Army Heavy Division¹

The aviation brigade in 82nd Airborne Division is similar to that of a light division, but 101st Airborne Division (Air Assault) has a unique configuration with a complement of over 250 helicopters and is the only division with organic Chinooks. The division has a unique capability to conduct deep airmobile operations and is held at short notice for possible worldwide deployment. It comprises three attack companies, each with 24 Apaches, a reconnaissance squadron of 32 Kiowa Warriors, three air assault and one command aviation battalion, each with 30 Blackhawks, and a medium helicopter battalion of 48 Chinooks. The structure of the division is shown at Figure 6.4.

¹ Source: *Army Aviation Digest*, November/December 1993.

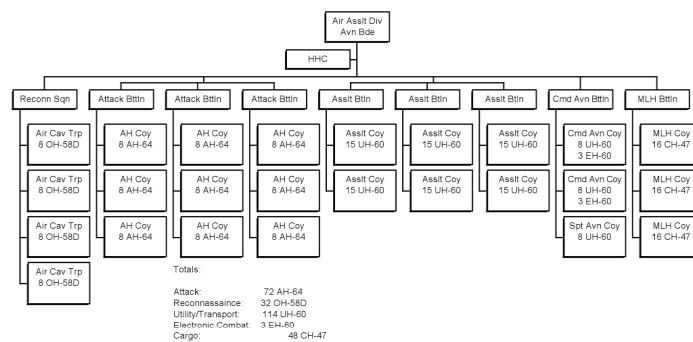


Figure 6.4: Organisation of Aviation in 101st Airborne Division (Air Assault)¹

¹ Source: *World Air Power Journal*, Vol. 27, Winter 1996.

Special Operations Aviation

The US Army provides dedicated aviation assets for special operations forces through the 160th Special Operations Aviation Regiment (SOAR), which is assigned to the US Army Special Operation Command, part of the joint US Special Operations Command (USSOCOM).¹ Special operations forces, including aviation, are made available to a wide range of users, including regional commanders-in-chief and other federal agents as tasked by the National Command Authority (NCA). In an operational theatre, Special Operation Forces are usually controlled by the Joint Forces Special Operation Component Command (JFSOCC), which also coordinates special operations with other component commands.

The 160th SAOR operates a wide range of helicopters, some of which are unique to the Regiment. These include the MH-47E Chinooks, MH-60L Blackhawks and A/MH6-J 'Little Birds'. The regiment comprises a training company and three operational battalions each operating a number of different versions of Chinooks, Blackhawks and Little Birds. Operations by 160th SOAR are supported by Air Force Special Operations Command (AFSOC), which also forms part of the special operation command and provides assets such as AC-130 'Spectre' Hercules for precision close air support and MC-130 'Combat Shadow' in-flight refuelling aircraft.² The unit also receives some administrative and logistic support from 101st Airborne Division (Air Assault), with which its headquarters is collocated at Fort Campbell, Kentucky.³

Command and Control

Command and control arrangements for US Army aviation forces are reasonably flexible and provide the capacity to be varied according to the operational environment. The land component commander normally retains control of army aviation forces, although during joint contingency operations, they can be attached or placed under the Operational Control of a joint task force commander. Specific command and control arrangements are established through either command or supporting relationships.

Command relationships for aviation include assignment, attachment, and Operation Control. Assignment is used when aviation units are established in an organisation on a long-term basis. Under this arrangement, the commanding headquarters administers assigned units for all command and support functions. Normally, aviation brigades are assigned to divisions, corps, and theatre armies, while aviation battalions and companies are usually assigned to aviation brigades. Aviation units are *attached* to another organisation where such placement is relatively temporary. The gaining commander exercises the same degree of command and control over attached assets and personnel as he does over organic units and personnel, subject to any limitations imposed in the attachment order. Operational Control is the typical command relationship of Army aviation manoeuvre assets when they are employed with ground manoeuvre formations, usually for missions or tasks of limited duration. Aviation forces are normally not placed under Operational Control of units below brigade level except in special circumstances. This is because the manoeuvre brigade is generally the lowest level of command with the necessary

¹ www.nightstalkers.com, accessed on 5 October 1997.

² Al Ditter, 'USAF SOF in Focus', *Defence Helicopter*, Vol. 16, No. 2, pp. 36-40.

³ Ring, 'United States Army Aviation', p. 153.

expertise and resources to plan, control, and support combined arms manoeuvre involving aviation operations.

For air assault operations, assault helicopter units are placed under the Operational Control of an air assault task force to operate in conjunction with ground manoeuvre units. According to US Army doctrine, attack helicopter battalions and cavalry (air reconnaissance) squadrons are always employed as battalion-size aviation manoeuvre forces when placed under Operational Control of another unit.¹ This is done to retain their combat robustness and inherent battlefield sustainability. Under this arrangement, the gaining force commander does not have the authority to task-organise the components of attack helicopter battalions or cavalry/ reconnaissance squadrons, nor does he have the authority to assign missions or separate employment tasks to components of the battalion/squadron.

Two types of support relationship can be established for aviation assets: Direct Support and General Support. To retain control at an appropriate level, aviation forces are not routinely allocated in Direct or General Support of formations less than brigade size. Moreover, the parent aviation headquarters usually retains responsibility for overall command and logistical support of the aviation assets. Direct Support is used to provide decentralised control of aviation forces and for increase responsiveness during operations such as high-tempo manoeuvre. It requires the supporting aviation unit to give priority support to a specified unit or force, including providing liaison staff to the supported unit headquarters. General Support exploits the benefits of centralised control and is used to support the force as a whole and when Army aviation has to coordinate and provide support to more than one of the force's major subordinate elements. As its name implies, General Support requires the aviation force to respond to requests for aviation from the supported unit or formation.

Internal Command and Control of Aviation

To control and support their operations, aviation units usually establish dedicated command posts. Normally, an aviation headquarters would establish a main and rear command post, with a tactical command post established as necessary. The main command post controls current aviation operations and plans future operations, while the rear command post concentrates on sustaining the aviation force. When necessary, a tactical command post is established to direct and provide control for aviation manoeuvre operations; the tactical command post could be in an aerial platform, such as the command and control variant of the Blackhawk.²

Army Airspace Coordination

Airspace coordination is accomplished through the Army Airspace Command and Control (A2C2) system. The system is designed to enable synchronised use of airspace, in time, space, and purpose, to produce maximum combat effectiveness and prevent fratricide. The system uses both procedural and positive control methods and is linked to the joint airspace control system that operates throughout the theatre under the Airspace Control Authority (ACA), who would normally also be the Joint Force Air Component Commander (JFACC). Specific methods can include establishing

¹ *Ibid.*, p. 2-2.

² UH-60C, or CinCHawk, a specially modified version of the Blackhawk with additional communications suites, *Ibid.*, p. 136.

Standard Aviation Flight Routes (SAFR), employing electronic Identification Friend or Foe (IFF) codes and positive radio clearance procedures.

Aviation Maintenance

The aviation maintenance system is structured for operational, intermediate and sustainment maintenance. Operational maintenance is conducted by Aviation Unit Maintenance (AVUM) companies, which are organic to aviation organisations at all levels. Intermediate maintenance is provided by Aviation Intermediate Maintenance (AVIM) units, which are associated with theatre, corps, and division aviation sustainment support facilities. An AVIM battalion belonging to the corps or theatre support command provides intermediate maintenance for theatre and corps aviation assets, while at the divisional level, an aviation maintenance company or battalion from the divisional support command provides a similar facility for division-level aviation assets. Under ARI, a dedicated Divisional Aviation Support Battalion (DASB) has been established to provide maintenance support as an organic asset to the aviation brigade in the heavy division, and is under consideration for light divisions.¹

Deeper logistic support is provided by the Army's Aviation and Missile Command (AMCOM), which was formed following the merger of Aviation Troop Command (ATCOM) and Missile Command in late 1996.² AMCOM provides the focal point for development, maintenance and sustainment of US Army Aviation assets and is the engineering authority for all Army aircraft; it also manages Army aviation acquisition programmes.³ In effect, all Army aircraft belong to AMCOM and are assigned to units for operational employment, although Army commands may not see it that way!

Army Aviators

Army aviation is not a monolithic organisation, and only achieved Branch status in the US Army as late as 1983. There are few very senior appointments in the Army specifically for aviators, and few aviators fill command appointments outside the aviation branch, perhaps suggesting the continuing dominance of the traditional combat arms of infantry, armour and field artillery.⁴ This is in marked contrast to the USAF, where pilots make up most senior command positions. The *de facto* head of Aviation branch is the commander of the US Army Aviation Center at Fort Rucker, Alabama. The Center forms part of the US Army's Training and Doctrine Command (TRADOC), and is responsible for basic, advanced and operational training of US Army aircrew. It comprises three training brigades, which provide flying training for Army aircrew, teach aviation and combined arms warfighting skills, and train aviation maintenance personnel. Only about 25 per cent of US Army pilots are commissioned officers, and the majority of Army aviators are commissioned warrant officers, recruited from within the Army or directly from civilian life.⁵ The mustering is unique

¹ Hill, 'Aviation Restructure Initiative', p. 47.

² Peter Donaldson, 'Army Scouts Ahead', *Defence Helicopter*, Vol. 16, No. 2, Jun-August 1997, p. 28.

³ Ring, 'United States Army Aviation', p. 140.

⁴ *Ibid.*, p. 129.

⁵ RAF Personnel and Training Command, *Study into The Variation of Helicopter Crew Ranks Across the Three Services*, PTC/110010/20/2/Air Sec, 13 March 1996.

to US Army Aviation and provides specialists who serve as aircrew throughout their career in the Army. There appears to be a strong 'soldiers first, aviators second' ethos in the US Army, with aircrew and maintenance personnel required to attend to normal soldiering duties such as standing guard and participating in road marches.¹

Army Aviation into the Future

The conceptual basis of the US Army in the 21st Century is outlined in TRADOC Pamphlet 525-5: Force XXI Operations.² One of the principle tenets of Force XXI is what the US Army describes as 'digitization of the battlefield,' in which all fighting elements enjoy 'hyperconnectivity' to provide them with 'superior situational awareness.' The aim is to ensure that the 'Army After Next' enjoys 'full spectrum dominance'.³ What this cavalcade of jargon means for aviation is that it is likely to continue to play a pivotal role in US Army operations. The key future project for Army aviation will be the introduction to service of the RAH-66 Comanche to replace Kiowas, Cobras, and Apaches operating in the scout/reconnaissance role. In the nearer term, early versions of the Apache are being updated to the AH-64D version, some of which will carry the Longbow radar. Upgrades to the Blackhawks and Kiowas are already under way and consideration is being given to extending the life of the Chinooks through the improved cargo helicopter programme.⁴ The organisational implications of these projects were planned into the ARI programme, but it is not yet clear whether there will need to be another examination of force structure in the light of continuing pressure on the US defence budget. What is clear is that the trend towards increased centralised control of aviation assets, for both logistic efficiency and operational effectiveness, is unlikely to be reversed.

CONCLUSION

The US Army has stood at the forefront in the development of helicopters almost since their inception. In a period spanning less than 50 years, helicopters have evolved from fragile machines barely capable of flight into robust combat platforms capable of fulfilling a wide range of combat missions and have become an essential element of the combat power for the US Army. The Army emerged from the Korean War convinced of their value as military machines; however, to the USAF, their roles were seen as peripheral. Nonetheless, they became the subject of intense debate between the Services until ownership issues were resolved through the framework of roles and missions agreements of the 1950s.

Spurred on by events in Vietnam, helicopters became a major force within the US Army in the 1960s, but their command and control remained widely dispersed. The conflict also led to rapid technological improvements as light liaison helicopters

¹ The 'soldiers first' ethos is epitomised by comments such as those by General Vessay who declared in 1982 that 'army aircrew are ground troops'. Quoted by Lieutenant Colonel Jack A. Kingston, 'Restructuring the Warfighting Capabilities of the United States', *US Army Aviation Digest*, September/October 1994, p. 11.

² TRADOC Pamphlet 525-5: *Force XXI Operations*, HQ Training and Doctrine Command, Fort Monroe, Virginia, 1994.

³ Scott R. Gourley, 'US Glimpses a "Digitized" Future', *Janes International Defense Review*, Vol. 30, September 1997, p. 52.

⁴ David S. Harvey, 'A Clearer Path Ahead', *Rotary and Wing*, Vol. 31, No. 1, January 1997, pp. 30-43.

for local use were joined by huge troop carriers, while utility helicopters armed with machine guns for self defence were developed into attack helicopters capable of deep interdiction missions. However, as helicopters with new capabilities were developed, disagreements between the Services resurfaced and at each stage of development the boundary between the Air Force's and the Army's domain was tested. However, by the early 1970s, battlefield helicopters had become firmly established within the US Army, which operated one of the largest aviation fleets in the world, including nearly 10,000 helicopters.

Led by developments in doctrine, aviation continued to grow in status in the 1980s. The fielding of Apache attack helicopters and the concentration of aviation assets into aviation brigades provided a new capability to conduct deep strikes and air manoeuvre. These developments coincided with Army Aviation achieving Branch status, establishing it as a major combat element of the US Army. Command and control of aviation was consolidated mainly at divisional level and above, reflecting a continual trend towards centralisation.

In all the major operations mounted by the US armed forces in recent years, helicopters have played a crucial role. The failed rescue attempt in Iran raised questions over which service was best placed to mount such an operation, but the issue remained unresolved, and the Army and Air Force set about developing overlapping capabilities. Operations in Grenada highlighted the vulnerability of helicopters to small arms fires, especially during daylight assaults. This lesson appeared to have been heeded by the time of Operation *Urgent Fury*, when most helicopter operations were conducted at night and few aircraft were shot-down.

The Gulf War provided a major test for the US Army, which made extensive use of helicopters in all its major operations. Because of the overwhelming superiority of allied air power, there were few calls for helicopters to support the air campaign, but the use of Apaches to open an air corridor into Iraq provided an insight for their potential to be used in such roles. Similarly, airmobile assaults deep into Iraqi territory by heliborne forces, and deep raids by attack helicopters operating well forward of surface forces, demonstrated the ability of helicopters to extend the operational depth of the battlefield. However, it also exposed tensions between the Army and the Air Force over the control of deep operations.

The use of helicopters in peace support operations demonstrated their continuing utility, but the loss of Blackhawks in Somalia once again showed their vulnerability to relatively unsophisticated weapon systems. The shoot-down of two Blackhawks during Operation *Provide Comfort* was a stark reminder of the risks of allowing helicopter operations to become too remote for other air operations, and highlighted the need to integrate friendly helicopter operations with the air defence system.

Further restructuring of Army Aviation during the 1990s has led to rationalising of most helicopters into single-type units, promoted mainly by the need for greater efficiency. Meanwhile, the fielding of ever-more capable helicopters has increased the ability of aviation brigades to conduct deep operations beyond the range of surface forces. In a development that mirrors the evolution of fixed-wing aviation before World War II, Army Aviation has steadily increased its capability to conduct independent operations, and it is tempting to speculate how long it will be before the arms and services start to develop 'organic' air capabilities! These trends were summed up poignantly by Matthew Allen as follows:

One is tempted to ponder the possible meanings of the Branch motto - 'Above the Best' - will Army Aviation simply roam the skies above the best army - or will it, in the other meaning of 'above', consider itself superior to the other arms and fly beyond them into new military theoretical territory?¹

¹ Allen, *Military Helicopter Doctrines of the Major Powers*, p. 58.

PART THREE

OPTIONS FOR THE UK

CHAPTER SEVEN

THE CURRENT UK FRAMEWORK

INTRODUCTION

The review in Part Two highlighted some of the key developments in the evolution of command and control arrangements for battlefield helicopters over the last 50 years or so. Recurrent themes were the need for balance in the degree of centralised control and, at times, difficulties in organisational structure due to a lack of mutual understanding and trust between the Services. Before considering how command and control of battlefield helicopters might be optimised for future operations to alleviate these difficulties, it is first necessary to examine wider arrangements within which any organisation for the command and control of helicopters must operate.

This chapter provides an overview of current arrangements in the UK. Higher defence arrangements are first considered, before outlining the helicopter forces of each of the three Services, and reviewing joint support structures. Since a commitment to NATO remains a principal element of British defence policy, command and control arrangements for NATO operations are also examined. This includes a brief overview of the command and control arrangements that were established for NATO helicopters operating in the Former Republic of Yugoslavia. Finally, arrangements for national operations, including both current and contingent operations, are briefly reviewed.

HIGHER DEFENCE ARRANGEMENTS

The defence organisation in the UK is based on the military capabilities of the three armed Services (Royal Navy, Army and Royal Air Force). To ensure strategic cohesion with political, diplomatic and economic initiatives, the forces are directed centrally through the Ministry of Defence (MoD). Crisis management is exercised at the highest level by Ministers either individually or through committees such as the Overseas Policy and Defence Committee. Strategic direction of the armed forces is provided by the MoD through the Chiefs of Staff and a Crisis Management Organisation, which includes Central Staff of the MoD and the Permanent Joint Headquarters (PJHQ).¹

The principal military adviser to the Government is the Chief of Defence Staff, who is also the professional head of the armed forces. The Permanent Under-Secretary (a senior civil servant) heads the department and, as the Principal Accounting Officer, is personally accountable to Parliament for expenditure of public money. The Central Staff of the MoD, which is headed jointly by the Vice Chief of

¹ Joint Warfare Publication (JPW) 0-01, *British Defence Doctrine*, Ministry of Defence, London, 1996, p. 5.15.

the Defence Staff and the Second Permanent Under-Secretary, determines strategy and proposals for the size and shape of the forces (including the specification of military equipment).¹ The Central Staff comprises civilian and service personnel from all three Services who operate jointly.

The Operational Requirements branch within the Central Staff prepares proposals for the procurement of major items of equipment (such as helicopters) based on broad defence needs. The Sea systems directorate prepares requirements for naval helicopters, while the Air systems directorate prepares army and air force helicopter requirements. Although it might seem more logical for all helicopter requirements to be prepared by a single directorate, the Navy would argue that helicopters are an extension of the ship's weapons system and therefore need to be considered as Sea and not Air systems. Whilst this may be appropriate for helicopters that operate in the anti-submarine, anti-surface warfare and airborne early warning roles, it does seem to be anomalous for transport helicopters operated in the amphibious role. This anomaly aside, requirements for helicopters are considered on a defence-wide basis and not simply to meet the needs of each Service. Once a requirement has been endorsed, it is passed to the MoD Procurement Executive (PE) which procures the equipment on behalf of the Services. The MoD(PE) also retains some responsibility for managing systems during the early years of operational service, including post design support, managing major modifications and issuing the Military Certificate of Airworthiness. Once a system is considered mature, these responsibilities are transferred to the Services.

Whilst the higher level management of defence, the procurement of equipment, the management of crises and the strategic direction of operations are undertaken centrally, the armed forces are recruited and organised on a single-Service basis. The single Services are funded to provide military capability ready for operations, which is appropriately manned, equipped, trained, exercised and supported. Each Service is headed by a Chief of Staff - the Chief of the Naval Staff (also known as the First Sea Lord), the Chief of the General Staff and the Chief of the Air Staff - responsible for the fighting effectiveness, morale and management of their Service. The Chiefs of Staff also provide military advice to Ministers and have the right of direct access to the Secretary of State for Defence and the Prime Minister.

SINGLE SERVICES

The Services each have three commanders responsible respectively for operations, logistics and personnel and training. The three operational commanders are the Commander-in-Chief (C-in-C) Fleet, Commander-in-Chief Land Command and the Air Officer Commanding-in-Chief (AOC-in-C) Strike Command. An additional Army Commander, the General Officer Commanding (GOC) Northern Ireland, is responsible for military operations by all three Services in the Province. The logistics commanders are the Chief of Fleet Support, Quartermaster General and Air Member for Logistic (also known as AOC-in-C Logistics Command). The personnel and training commanders are the Chief of Navy Personnel (also the 2nd Sea Lord and Chief of Naval Home Command), Adjutant General and Air Member for Personnel

¹ *Ibid.*, p. 7.4.

(also known as AOC-in-C Personnel and Training Command). Each of these commanders holds a Top Level Budget to meet the cost of their organisation. Helicopters are operated by all three Services in a wide number of roles.

Royal Navy

The Royal Navy's helicopter fleet forms part of the Fleet Air Arm and comprises approximately 120 Sea Kings and 75 Lynx helicopters, of which about one third are held in reserve. The Lynx (Mk 3 and Mk 8) are operated in the anti submarine or anti-surface warfare roles from frigates or destroyers. Sea King Mk 5 and Mk 6 also operate in the anti-submarine warfare role, while Sea King Mk 2 is used in the airborne early warning role. It is planned to introduce the EH 101 Merlin around the turn of the century to replace most aircraft in these roles. Additionally, the Royal Navy operates a number of Sea King Mk 4 as Commando support helicopters in support of the Royal Marines in the amphibious warfare role. A small number of helicopters are also employed in specialist tasks such as search and rescue.

All aircraft in the Royal Navy Fleet Air Arm are under the full command of the Commander-in-Chief Fleet. Flag Officer Naval Aviation is the administrative authority for the Fleet Air Arm and is responsible for its operational capability and training. When embarked, operational control of aircraft can be vested in the relevant sea going commander: the Royal Navy considers embarked aircraft to be an integral part of the ship's weapon system. Anti-submarine warfare and airborne early warning helicopters are deployed in squadrons or flights to shore bases and aboard ships. Two commando support helicopter squadrons support amphibious commando operations, operating under the tactical control of the Headquarters Commando Helicopter Force for operations. Commando support helicopters can also operate in support of army units, but only at the expense of support to their main user unit, the Royal Marine Commando Brigade. The command and control of Royal Navy helicopters is shown at Figure 7.1.

First-line engineering and logistic support of Royal Navy helicopters is provided mainly by Royal Navy engineering personnel, who operate from ships when the helicopters are embarked, or with the squadrons on the various Type Air Stations when disembarked. When deployed on operations, naval engineering personnel are required to carry out military tasks on board ships in addition to their engineering duties, such as operating ship's weapon systems and carrying out firefighting duties. Second-line support is provided by each of the Type Air Stations and by mobile support units that deploy with major units.

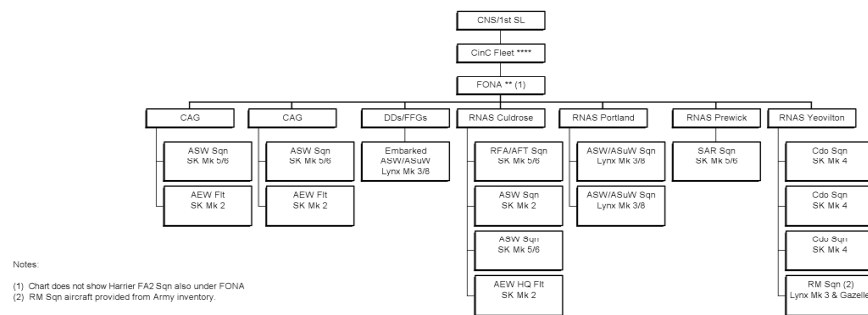


Figure 7.1: Organisation of Helicopter Forces in the Royal Navy

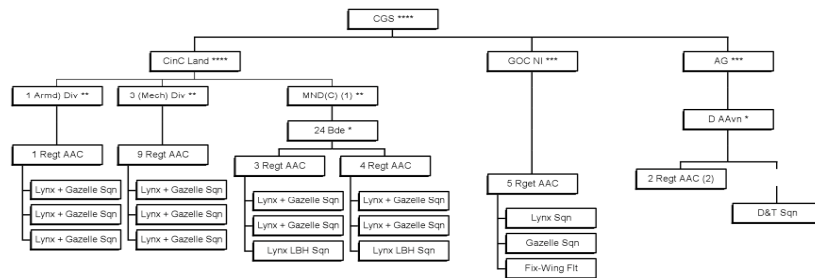
Army

Army Aviation has about 260 established helicopters, mainly Lynx and Gazelle.¹ Gazelles are used for observation and reconnaissance, direction of fire, assistance in command and control as well as having a training role. Lynx Mk 7 can be fitted with TOW missiles and are employed in the armed action role, but can also be used for the limited movement of personnel and supplies. Lynx Mk 9 are used for light battlefield support tasks, including command and control and troop movement. In addition, a relatively small number of Agusta 109A and Bell 212s are used for specific support tasks. It is planned to introduce the Westland WAH-64 attack helicopter during the early years of the next century to replace Lynx Mk 7 operating in the armed role. The WAH-64 will be a licence-built version of the McDonnell Douglas AH-64D Longbow Apache, and will provide a quantum increase in capability over the Lynx.

Most operational Army aircraft belong to units of Land Command, while those in the training role come under the Adjutant General. The command and control of Army Aviation units generally aligns with the formation they support as organic elements. However, the Directorate of Army Aviation, which is part of the Adjutant General's Command, is responsible for Army Aviation organisation, doctrine, operational requirements, training policy and regimental matters. The Director Army Aviation is also the professional head of the Army Air Corps (AAC). The AAC comprises six Regular Army regiments, one Territorial Army (volunteer reserve) regiment, and a battalion of Royal Electrical and Mechanical Engineers, as well as a number of independent flights deployed in support of Army units world-wide. One regiment is assigned to each of the Army divisions (1 Regiment to 1(UK) Armoured Division and 9 Regiment to 3(UK) Mechanised Division), two regiments are assigned to 24 (Airmobile) Brigade (3 and 4 Regiments), and one regiment (5 Regiment) assigned to Headquarters Northern Ireland. Additionally, a squadron of Lynx and Gazelle (847 Naval Air Squadron) is assigned to the Royal Marines and although the aircraft are 'owned' by the AAC, they are operated by the Royal Marines and flown by Royal Marine pilots. The command and control of Army helicopters is shown at Figure 7.2.

First and second-line engineering support of Army aircraft is provided by aircraft engineering personnel from the Army's corps of Royal Electrical and Mechanical Engineers (REME), who operate from the various AAC bases and deploy forward with the squadrons. In addition to their engineering duties, Army aircraft engineers are required to carry out military duties such as guarding and collective protection when deployed. Royal Logistic Corps (RLC) personnel provide aviation supply support to AAC units.

¹ Established aircraft are those aircraft whose support costs are specifically funded. In addition, a number of reserve aircraft are held to support the established fleet to allow for attrition and to provide a pool for maintenance and modification programs.



Notes:
 1. Under NATO Command.
 2. Ground training only (no aircraft).
 3. Independent Flights not shown.

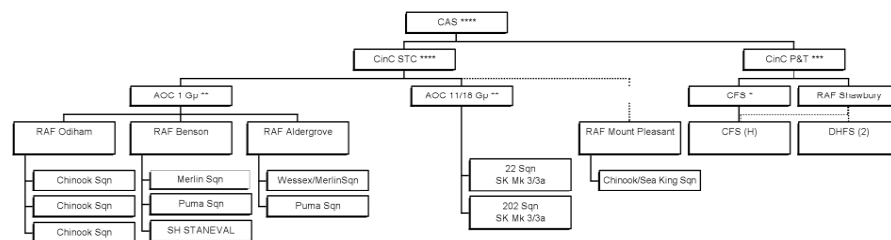
Figure 7.2: Organisation of Aviation in the British Army

Royal Air Force

The RAF has about 130 established helicopters, including Chinook, Puma, Sea King and Wessex. Most Wessex will be withdrawn from service by about the turn of the Century, but additional Chinook are being procured as well as several of the utility version of the EH 101 Merlin. Chinook, Puma, Wessex, and EH101 (in due course), form the support helicopter force, which operates mainly in support of Army operations, including Special Forces operations. The main roles are airmobile operations, troop movement, logistic support, casualty evacuation, and movement of battlefield equipment. The Sea Kings operate in the search and rescue role.

All RAF Helicopters are under the full command of AOC-in-C Strike Command. AOC 1 Group commands the support helicopter force, while AOC 11/18 Group commands the search and rescue helicopters. However, most of the RAF support helicopter force is declared to NATO, and would come under Operational Control of a NATO commander following transfer of authority in accordance with NATO procedures. When deployed on national tasks, Operational Control would probably be delegated to a joint commander. Tactical Control of support helicopters would normally be exercised through the support helicopter force headquarters. There are two search and rescue squadrons, which operate Sea King helicopters from detached flights around the UK, and a separate Sea King training Flight. In addition, there is a Wessex squadron in Cyprus, a Wessex squadron operating in support of the security forces in Northern Ireland, and a combined Chinook and Sea King squadron in the Falkland Islands. There are five support helicopter squadrons of Chinook and Puma (including training units) declared to NATO and available for deployment on national tasks. The command and control of RAF helicopters is shown at Figure 7.3.

First-line engineering support is provided mainly by RAF engineering personnel who are integral to the squadrons and deploy forward during operations. Second-line support is centralised at each of the main bases, but also deploys forward for major operations. In common with Army personnel, RAF engineers are required to carry out military duties in the field, including guarding and collective protection tasks.



Notes:
 1. Royal Sqn Helicopters not shown
 2. Tri Service organisation

Figure 7.3: Organisation of Helicopters in the RAF

JOINT SUPPORT STRUCTURES

Defence Helicopter Flying School

Prior to April 1997, each Service conducted helicopter basic flying training separately. Since then, however, the task has been rationalised and transferred to the tri-Service Defence Helicopter Flying School, which provides helicopter basic flying training common to all three Services.¹ The aircraft are owned and operated by a private contractor and the school is staffed by a mixture of military and civilian instructors. The School operates from an RAF airfield, but is commanded separately by a commandant from any of the three Services. Airfield facilities (such as air traffic control, facilities and meteorology) are provided through a service level agreement with the RAF Station Commander. Similarly, the commandant maintains Service Level Agreements with the personnel and training commanders (Chief of Naval Personnel, Adjutant General and Air Member for Personnel) detailing, *inter alia*, training output standards.

Defence Helicopter Support Agency

The Defence Helicopter Support Authority was formed in 1994 as a multi-disciplinary support organisation for all Service helicopters. The Authority incorporates integrated engineering, supply, contracts and finance staff and provides the focus for helicopter logistic support. The Authority operates on behalf of the three Service logistics commanders (Chief of Fleet Support, Quartermaster General and Air Member for Logistics) under the 'stewardship' of the Chief of Fleet Support. Its main responsibilities are for helicopter platform and engine management, including support policy, airworthiness and life cycle costs. Collocation of the three Services' helicopter support authorities under a unified command encourages the adoption of 'best practice' across Service boundaries and enables efficiencies to be found on a Defence-wide basis.

Third-Line Support

Deeper maintenance of helicopters of all three Services is carried out by the Navy Aircraft Repair Organisation (NARO), which is a Defence Agency under the control of the Director General Aircraft (Navy) (DGA(N)). The Royal Navy also operates the Mobile Aircraft Support Unit (MASU), which is responsible for inspecting damage, carrying out repairs, transporting and salvaging damaged helicopters of all three Services. Supply support of tri-Service helicopter fleets is provided by the RAF on a lead-Service basis using a supply information technology system for accounting, stock control, and distribution. However, each Service remains responsible for its stock holding policy and local distribution of spares.

¹ 'Joint Venture to run new Rotary School', *RAF News*, No. 909, 18 October 1996, p. 1; and Earl Howe, 'Written Answer 69', *Lords Hansard Written Answers*, 7 November 1996.

NATO STRUCTURES

Higher Command Structure

Since the end of the Cold War, NATO forces have been radically restructured to meet the requirements of the new security environment. The cornerstone of NATO remains collective security arrangements under Article 5 of the NATO treaty, under which member nations agree to take action as necessary, including the use of armed force, to restore and maintain security of the alliance area.¹ Accordingly, for Article 5 operations, (ie. operations within the NATO area) nations agree to delegate Operational Control of their forces to a Major NATO Commander (ie. Supreme Allied Commander Europe (SACEUR) or Supreme Allied Commander Atlantic (SACLANT)) at the appropriate stage during the build-up to operations. Forces are assigned different levels of readiness to provide rapid reaction forces, main defence forces or augmentation forces. Within SACEUR's area, forces are normally assigned to the regionally based major subordinate commands (ie. Allied Forces North West (AFNORTHWEST), Allied Forces Central (AFCENT) and Allied Forces South (AFSOUTH), which provide headquarters and command and control infrastructure for operations within their geographic area. Each major NATO command comprises a number of principal subordinate commands, which in most cases are functionally based on maritime, land or air forces (eg. Naval Forces North West (NAVNORTHWEST), Air Forces CENTRAL (AIRCENT) and Land Forces Central (LANDCENT) etc.

Reaction Forces

Additionally, a number of reaction units have been formed for employment throughout, and possibly beyond, the NATO European area. These include the Allied Command Europe (ACE) Mobile Force (Land) (AMF(L)), the Allied Rapid Reaction Corps (ARRC), and a Reaction Force (Air) (RF(A)). Battlefield helicopters are normally assigned to land units, such as the ARRC and AMF(L). The AMF, which is to be redesignated as the Immediate Reaction Force (Land) (IRF(L)), is a brigade size unit of about 5,000 troops from several NATO nations and includes a multi-national helicopter force made up of four RAF Pumas and German Army UH-1 helicopters.² When deployed, the helicopters come under the operational control of the force and are tasked by the Force Helicopter Unit.

The ARRC is the land component of NATO's reaction forces. The ARRC headquarters provides a framework for command and control and the actual operational organisation, composition and size of the ARRC would depend on a number of factors, including the type of crisis, area of crisis, its political significance, and the capabilities and availability of regional and local forces.³ The ARRC Headquarters, which is under British command, could deploy up to four divisions and corps troops. In addition to national divisions from a number of NATO countries, major units available to the ARRC include two framework divisions under British lead (1st (UK) Armoured Division and 3rd (UK) Mechanised Division) and two

¹ NATO Handbook, On Line, <http://www.nato.int>, accessed 11 September 1997.

² *Ibid.*

³ *Ibid.*

Multinational Divisions, (Multinational Division Central (MND(C)) and Multinational Division South (MND(S)). MND(C) is essentially an airmobile division comprising airmobile brigades from Belgium (Regiment Para-Commando Brigade), Britain (24 Airmobile Brigade), Germany (31 *Luftlandebrigade*), and the Netherlands (11 Airmobile Brigade).¹ The Headquarters of the ARRC and the two Multinational Divisions are under command and control of the Supreme Allied Commander Europe (SACEUR) in peacetime, but the remaining divisions and units come under SACEUR's operational control only after being deployed.

UK Helicopter Assignments to NATO

The RAF support helicopter force is assigned to support the ARRC with Chinooks and Pumas and would normally be placed under the operational command of the Corps, with tactical control exercised through the support helicopter force headquarters. RAF SH would also support MND(C) and would probably be placed under tactical control of the Division for specific operations, but only when released from other tasks by the Corps Commander. This arrangement not only reflects the RAF doctrine of retaining control at the highest practical level, but also meets the reality of a relative paucity of transport helicopters, which are not available in sufficient numbers for them to be divided up among all the potential user units. It also ensures that the highly valuable lift capacity is available at the unit with the highest priority need, although there is likely to be some loss of responsiveness. In contrast, AAC helicopters are placed under command at a lower level, with an AAC regiment assigned to each of the two (UK) framework divisions, and two regiments assigned to 24 (Airmobile) Brigade. This not only reflects the army doctrine of decentralisation, but is also practical because of the larger number of AAC helicopters. Decentralisation means that they can be more responsive and, because their lift capacity is limited, the loss of efficiency is less critical. However, whether this level of decentralisation will still be appropriate when more capable helicopters are deployed is open to question.

NATO Airspace Management

However, while most battlefield helicopters in NATO would come under the command and control of land forces, the airspace they must use is normally controlled by air forces. To centralise the control of air operations within regional areas, NATO is in the process of developing Combined Air Operation Centres (CAOCs), which bring together control of offensive and defensive air operations into a single organisation.² The CAOC, which would normally form part of the air component commander's organisation, would be responsible for the day to day management of airspace within an area of operations. Certain types of helicopter operation (eg. air interdiction and combat search and rescue) might logically be controlled by the air component commander, in which case, they would be directed from the CAOC; however, most helicopters operations would probably be controlled by the land component. Nonetheless, all helicopter sorties would need to be coordinated through the CAOC to avoid incidents such as the shooting down of the two US Army UH-60

¹ Major General Pieter Huysman, 'Air Mobility in NATO: The New MND(C)', *Royal United Services Institute Journal*, Vol. 139, No. 2. April 1994, pp. 45-50.

² Squadron Leader P.N. Hinton, 'The United Kingdom Combined Air Operations Centre', *Air Clues*, Vol. 51, No. 3, March 1997, pp. 90-93.

Blackhawk helicopters by USAF fighters over Iraq in 1993.¹ The link between the CAOC and the land component is the Air Operations Coordination Centre (AOCC), which would normally be established in the appropriate land force headquarters. One of the tasks of the AOCC would be to ensure the land force requirements for airspace are made known to other airspace users, especially air defence assets. The AOCC also coordinates requests for air support from surface units through a network of liaison staff attached to the brigades and battalions, referred to as Tactical Air Control Parties (TACPs). TACPs provide Mobile Air Operations Teams (MAOTs) to support transport operations and Forward Air Controllers (FACs) to coordinate offensive air support.

A combination of procedural and positive control methods is available for controlling airspace. Positive control measures are extremely flexible, but rely on real-time data transmission, usually electronically (eg. by radar, radio communications or data links). Consequently, they may be subject to interference, either by the hostile forces (eg. jamming) or environmental factors (eg. terrain screening) and cannot, therefore, be relied upon. Improvements in information technologies may increase the capacity of positive control measures, but it seems likely that in most circumstances they will remain subject to the vagaries of the enemy or the environment. Procedural methods, such as allocating blocks of airspace to particular users, tend to be less flexible, but are less dependent upon real-time data and are therefore more robust. In practice, a combination of positive control and procedural methods will usually be employed.

Operations Outside the NATO Area

In recognition of the possible requirement for its forces to be employed in operations outside the NATO area, and perhaps alongside the forces of non-NATO countries, the Alliance has recently formed a Combined Joint Task Force Headquarters (CJTF HQ). The CJTF is intended to provide a rapidly deployable command and control framework, primarily for peace support operations outside the NATO area.² The command and control concept for the CJTF appears to be based on the functional component organisation, comprising a joint force commander with component commanders for sea, land, and air forces, as well as Special Forces and logistics as necessary.³ The CJTF was not established in time for the deployment of NATO forces to Bosnia, which had to rely on adapting existing command and control structures based mainly around the ARRC.

Former Republic of Yugoslavia

The NATO led, multi-national implementation force (IFOR) took over from the UN in December 1995 following the signing of the Dayton Peace Accords. IFOR had a unified command structure, under overall military authority of SACEUR, who designated the Commander in Chief Southern Command (CINCSOUTH) as the first Commander in Theatre of IFOR (COMIFOR). Air operations were under the control of 5 Allied Tactical Air Force through a CAOC established in Vicenza, Italy. Command in Theatre was exercised through HQ ARRC based in Sarajevo, which

¹ See Chapter 8.

² Air Vice-Marshal I. M. Stewart, 'Deployable C2 Capability', *Air Clues*, Vol. 51, No. 3, March 1997, p. 84.

³ *Ibid.*, p. 87.

included an AOCC with links to the CAOC. The IFOR Theatre was divided into three Areas Of Responsibility (AORs), with operations in each area conducted by a Multi-National Division (MND): MND (North), based at Tuzla under US command; MND (South-East), based at Sarajevo under French command; and MND (South-West), based at Gornji Vakuf under British command. For air operations, the link between MND(SW) and the AOCC was provided by the TACP, which was located in the Divisional headquarters and comprised air (ie. RAF) and aviation (ie. AAC) liaison staff.

IFOR included a large number of helicopters, which were mainly deployed in support of the divisions. The US deployed more than 159 helicopters, including 24 AH-64 Apaches and a mix of UH-60 Blackhawks, OH-58 Kiowas and CH-47 Chinooks in support of the US Army's 1st Armoured Division. The deployment included the Divisions 4th Aviation Brigade, comprising two attack helicopter battalions equipped with AH-64 Apaches, a combat aviation battalion equipped with UH-60 Blackhawks and a Cavalry squadron equipped with OH-58D Kiowas. The Brigade's main operating base was set up at Tuzla air base in the MND(N) AOR. Additionally, CH-47 Chinooks from the 12th Aviation Brigade were also deployed to support IFOR operations. The French contribution included over 20 Pumas and Gazelles, based in Sarajevo in support of MND(SE). In addition, the Dutch Air Force deployed a small number of Alouette 3s, while the German Army provided four UH-1s for liaison and casualty evacuation based in Zadar, Croatia.¹

IFOR helicopters mainly operated within their discrete divisional areas, which probably simplified command and control by following mainly national lines; however, this arrangement led to an uneven distribution of capability and lacked the efficiency of a centralised organisation. In particular, there was an extremely powerful helicopter force in MND(N), and a relative paucity of attack helicopters in the other sectors. However, while pooling the helicopters into a multi-national force at corps level would have provided a highly capable force for use throughout the theatre of operations, it would have created other problems. Given the complex multi-national nature of the operation, routine operations across divisional boundaries may have been difficult to organise and corps-level control may have lacked the responsiveness of divisional-level tasking. Moreover, despite the decentralised control, helicopters were still able to deploy across divisional boundaries as the situation warranted, and this option was frequently exercised. In particular, US Army Apaches, which proved to be especially useful in providing a powerful deterrent force during tense stand-offs between IFOR troops and former warring factions, were often tasked throughout the theatre of operations.²

The British provided 14 armed Lynx Mk 7s and four Gazelles from the 1 Regiment AAC, along with a support helicopter force of six RAF Chinooks and four RN Sea Kings. The AAC regimental headquarters and the support helicopter force were established in Split, Croatia, although most of the Lynx and Gazelles were forward deployed to Gornji Vakuf alongside the MND(SW) headquarters; additionally two Lynx were attached to the ARRC HQ in Sarajevo. With Lynx and Gazelles deployed forward, and the RAF helicopters based in the more comfortable location on the coast, the arrangement bears a striking resemblance to those in Aden during the RADFAN crises.³ One significant difference, however, was the vastly increased capability of the Chinook over the Belvedere, not just in terms of its lift capacity, but

¹ 'The Endeavor to Reunite Bosnia', *Rotary and Wing*, Vol. 31, No. 6, June 1997, p. 46.

² Timothy Ripley, 'Apache over Bosnia', *World Air Power Journal*, Vol. 29, Summer 1997, p. 98.

³ See Chapter 4.

also in its ability to operate at night and in poor weather. Consequently, rearward basing did not seriously effect its ability to support missions, while logistic efficiency was significantly enhanced. Moreover, improvements in communication and liaison would also have mitigated the shortcomings of earlier operations.

Tasking arrangements in the British sector reflected procedures established in peacetime. Requests for helicopters were submitted by units to the divisional headquarters, where they were processed by the TACP and issued as tasks to the helicopter units; additionally, AAC helicopters could be tasked directly the brigade or Battalion headquarters to which they were attached. Details of helicopter sorties were relayed by the TACP through the AOCC and CAOC for coordination with other airspace users. This was achieved by ensuring that all helicopter sorties, including contingent sorties such as casualty evacuation, appeared on the ATO issued by the CAOC.

Following the completion of the IFOR mission on 20 December 1996, NATO established a stabilisation force (SFOR) under the command of LANDCENT. Although general force levels in theatre were reduced, the helicopter contingents remained at similar levels, and command and control arrangements remained largely unchanged.

NATIONAL OPERATIONS

In addition to a commitment to NATO operations, British forces also face a number of on-going tasks for which the single-Service Chiefs of Staff each has delegated responsibility (eg. fishery protection, support to the civil power in Northern Ireland and air defence of the UK). Of these, the commitment to Northern Ireland has placed the greatest demands on the UK's helicopter fleet. Although responsibility for operations in Northern Ireland has been delegated to the Chief of the General Staff, they involve forces from all three Services and therefore provide a useful case study for command and control.

Northern Ireland

Operations in Northern Ireland are categorised as Military Aid to the Civil Power.¹ Political direction is provided by the Cabinet Northern Ireland Committee, which includes the Secretary of State for Defence and the Secretary of State for Northern Ireland. Day to day political control of operations is exercised by the Secretary of State for Northern Ireland, while the GOC Northern Ireland directs military operations in the province through the headquarters in Lisburn, just outside Belfast. However, at all levels, the armed forces operate in support of the civil police throughout the Province.²

For military operations, the Province is divided into three brigade areas with 3 Infantry Brigade based at Portadown in the south, 8 Infantry Brigade based in Londonderry in the north-west, and 39 Infantry Brigade also based in Lisburn. Brigade areas are further divided into battalion areas of responsibility. RN, AAC and RAF, helicopters are based at RAF Aldergrove and deploy to forward operating bases throughout the Province. Two RAF squadrons (72 Squadron and 230 Squadron) are

¹ *British Defence Doctrine*, p. 6.12.

² *Ibid.*

based at RAF Aldergrove, operating Wessex, Puma and Chinook helicopters. RAF personnel come under the command of the Senior RAF Officer Northern Ireland, who is also the Station Commander and reports to the Air Officer Commanding Number 1 Group, as well as to the General Officer Commanding Northern Ireland on operational matters. AAC helicopter are also based at RAF Aldergrove and form 5 Regiment AAC, which comprises two helicopter squadrons (655 Squadron operating Lynx Mk7 and 665 Squadron operating Gazelle) and a fixed-wing aircraft flight. The Commanding Officer 5 Regiment AAC reports to the General Officer Commanding Northern Ireland. RN Sea Kings have also been deployed to the Province from time to time, based at RAF Aldergrove, but usually deployed forward in direct support of operations in the 8 Infantry Brigade area.¹

Helicopter operations in Northern Ireland are a joint business, with both centralised and decentralised tasking being practised. All types of helicopters can be deployed to forward operating bases to operate in direct support of battalions or brigades, although most tasking is coordinated centrally through a joint tasking cell at Headquarters Northern Ireland. Tasking of forward-deployed helicopters is collated and assessed by the brigade/battalion tasking cell (known as Buzzard operations). For larger operations, additional aircraft are provided from RAF Aldergrove or re-deployed from other brigade/battalion areas.

With over 25 years of experience of operating helicopters in the Province, command and control arrangements have become well established and ownership by separate Services seems utterly irrelevant to day to day operations. Whilst it may seem anomalous to have separate command and control arrangements for RAF and AAC helicopters, routine tasking is unaffected and there seems little to be gained from rationalising these arrangements. However, operations in other areas may not provide time for effective arrangements to be worked up as they have been in Northern Ireland. Consequently, it will be necessary to ensure that normal peacetime arrangements can be readily adapted to meet the exigencies of crisis.

National Joint Operations

British defence policy recognises the need for British forces to be capable of operating independently or as part of a wider coalition in some circumstances.² Accordingly, a Permanent Joint Headquarters (PJHQ) has been established as the basis for a joint national command structure. The deployment of UK forces on national joint operations assumes the appointment of a joint commander, who will exercise operational command at the military-strategic level and a joint force commander who will normally exercise operational control over assigned forces in the theatre of operations.³

The primary command and control options for the joint force commander are the direct or component method. Under the direct method, which would probably be most suitable for small-scale operations, the joint force commander would exercise command directly through his headquarters staff. For larger operations, he may appoint joint force component commanders, such as joint maritime, land and air component commanders, as well as logistics, Special Forces and other commanders as may be appropriate. In addition to commanding forces from their own command,

¹ Patrick Allen, 'Buzzards and Eagles', *Airforces Monthly*, No. 76, July 1994, pp. 22-27.

² Statement on the Defence Estimates 1996 (Cm 3223), Her Majesty's Stationery Office, London, Chapter One.

³ *British Defence Doctrine*, Annex D, p. D.1.

component commanders could be assigned additional forces either under operational or tactical control. An issue to be resolved is the degree to which helicopter operations should fall under the control of the air or the land component commander.

CONCLUSION

While the three services remain the basis for raising, training and maintaining the UK armed forces, the higher management of defence, crisis management and major equipment issues are all decided centrally. Additionally, joint structures have been established for the operational employment of the UK armed forces in most circumstances. There is also a high level of integration in the support of the three Services helicopter fleets, with both tri-Service and lead-Service arrangements in place.

NATO structures have also evolved to provide a high level of integration between the various air, land and sea components. Operations in the Former republic of Yugoslavia have shown a pragmatic approach to command and control, reflecting operational needs over any single-Service dogma that seemed to plague earlier operations. Similarly, arrangements for national operations reflect this pragmatic approach, although there may still be some scope for further rationalisation of command and control structures. However, before considering what form these structures might take, it is first necessary to consider some of the factors that might influence future arrangements.

CHAPTER EIGHT

INFLUENCING FACTORS

INTRODUCTION

The primary determinate for command and control arrangements for military forces should be their suitability for conflict. In practice, however, arrangements are shaped by many influences including strategic, political, cultural and technological factors. Armed forces are also often used in a wide range of non-conflict environments, perhaps increasingly in the future, and this may also have a bearing. This chapter considers these factors as they relate to the command and control of helicopters in the UK armed forces.

The broad strategic environment is first considered to identify the place of helicopters in future conflict, followed by a brief review of some of the enduring political factors that help shape the UK armed forces. Cultural aspects of the Services are then explored in recognition of the importance of human factors in the command and control systems. Finally the influence of technological factors, such as the introduction of new helicopters, are considered.

STRATEGIC CONSIDERATIONS

The Security Environment

While the end of the Cold War saw the passing of a dominant strategic threat to the West, it also unleashed a period of uncertainty and unpredictability. For the time being, the likelihood of a major military threat to the West seems remote, but there remain significant tensions in world affairs and the risk of other forms of conflict has increased. Stark disparities in the distribution of resources are likely to lead to tensions both within and between nations; moreover, perhaps leading to the emergence of radical movements that proselytise the impoverished masses. Traditional sources of conflict, such as territorial disputes and power struggles, are likely to continue, while issues such as environment degradation, mass migration and water shortages may take on global significance. According to some analysts, increasing worldwide political and military instability is likely to lead to proliferation of military capabilities around the world.¹

van Creveld predicts the end of Clausewitzian 'trinitarian' war - the triad of the state, the armed forces and the people - and the rise of terrorist and other separatist groups within individual nations as the major source of conflict.² To support this view, 79 of the 83 acknowledged conflicts reported world wide in 1995 were intra-

¹ See for example J. Mohan Malik, 'Sources and the Nature of Future Conflicts in the Asia-Pacific Region', in J. Mohan Malik (Ed), *The Future Battlefield*, Deakin University Press, Geelong, 1997, pp. 29-83.

² Martin van Creveld, presentation to RAAF Air Power Studies Centre, Canberra, July 1997.

state, while of the 100 or so wars that have been fought since 1945, fewer than 20 were between states.¹ Gasteyger takes this view further describing the multiplication in the number of actors, issues and means involved in conflict in recent years.² However, there appears to be a declining probability of major inter-state war in favour of lower (but no less deadly) forms of conflict.

Thus, while many Western nations face a reduced likelihood of becoming involved in a war of national survival, there are likely to be increased demands for armed forces to be used as 'agents to restore internal order in nations that collapse or fall apart'.³ Freedman has described this as a transition from wars of necessity to wars of choice.⁴ The significance of all this is that different forms of conflict will require different types of forces to deal with them; moreover, forces will need the capability to deal with non-combat operations. Consequently, command and control arrangements will need to be extremely flexible and adaptable.

Defence Policy

The dramatic changes in the strategic circumstances since the end of the Cold War have been recognised in British defence policy, and have led to significant remodelling of the structures and capabilities of the armed forces. At the time of writing (1997), British defence policy is subject to a strategic defence review, which could lead to further changes. Nonetheless, the circumstances in which British forces might be used seem likely to remain unchanged. These include protecting the security of the United Kingdom and Dependent Territories and promoting and defending Britain's wider security interests worldwide.⁵ To fulfil these broad aims, British Defence Policy identified seven Mission Types that British Forces may need to conduct, including aid to civilian authorities, a contribution NATO and the Western European Union (WEU), and other military assistance and limited operations to support British interests and international order and humanitarian principles.⁶ Helicopters from all three Services can make an important contribution to all seven Mission Types.

The Mission Types can be categorised requiring British Forces to operate in a *contributory* or *expeditionary* role, with the majority of missions requiring expeditionary type forces.⁷ An issue in British defence policy is the degree to which contributory or expeditionary type missions should determine force structure. Until recently, contributory forces were the main 'force driver' in determining equipment priorities, with other tasks met by 'building-down' from force configured for such operations. However, there appears to be a shift in emphasis towards expeditionary

¹ G.A.S.C. Wilson (Ed), *British Security 2010*, Proceedings of a Conference held at Church House, Westminster, November 1995, p. 8.

² Curt Gasteyger, 'Sources of Future Conflict: A Global Overview', *Ibid.*, pp. 15-25.

³ *Ibid.*, p. 2.

⁴ Lawrance Freedman, 'The Future of Military Strategy', *Brassey's Defence Year Book 1996*, Brassey's and Centre for Defence Studies, London, 1996.

⁵ Statement on the Defence Estimates 1996 (Cm 3223), Her Majesty's Stationery Office, London, Table 1.

⁶ *Ibid.*, Table 3.

⁷ *Contributory* missions are those involving contributions to alliances and coalitions that can be integrated at the tactical level, whereas *expeditionary* missions involve balanced forces able to project power to either act alone or in coalitions to be integrated at the operational or strategic level. Michael Codner, 'The United Kingdom's Strategic Defence Review: Strategic Options', *Royal United Services Institute Journal*, Vol. 142, No. 4, August 1997, p. 48.

type forces.¹ This development could lead to greater prominence for systems and forces that offer the greatest flexibility and mobility in operational employment rather than systems designed exclusively for combat employment. This trend further indicates that helicopters are likely to remain an important element of the military order of battle.

AN ARMY VIEW OF FUTURE WARFARE

To provide a framework for development of force structure across the diverse spectrum of future conflict, the British Army has established a process known as 'British Army in the 21st Century' (BA 2000).² Similar exercises have been undertaken in the United States, leading to the Force XXI concept, and in Australia, leading to a plan for restructuring the army for the 21st century.³ The British Army's process has identified two speculative views of future conflict based on the emerging trends. These views are not intended to provide detailed predictions of warfare, but do illustrate the range of operations that future force structures will need to accommodate. Overlaying these views is the so-called 'Revolution in Military Affairs' in which emerging technologies, particularly information technologies, are expected to have a powerful influence at all levels of conflict.⁴

View One

The first view is that continuing tensions between states will spill over into major regional conflict of the sort seen in the 1991 Gulf War. For Western nations, these operations would be expeditionary in nature, probably fought as part of an alliance or coalition, and involve the full range of conventional military capabilities. They would almost certainly be joint, requiring close integration of air, land and sea components. Compared with Cold War force levels, these conflicts are expected to involve fewer weapons platforms operating over larger areas, but with increased precision and greater firepower. This will lead to a less dense battlefield in which there are ill-defined dividing lines between opposing forces, less clear distinctions between front and rear areas, and the capabilities of the components of air, land and sea will increasingly overlap. This form of conflict will require forces that are capable of rapid and sustained deployment, delivering long-range precision weapons, and offer a high level of survivability. Air power, and especially attack helicopters, which embrace many of these characteristics, are especially well suited to this style of warfare.

¹ The 1995 Statement of Defence Estimates indicated that 'future equipment decisions will take account of requirements arising from operations across all three Defence Roles, including the need for equipment which may be relevant only, or primarily, to lower intensity non-combat missions'. *Stable Forces for a Stronger Britain*, Statement of the Defence Estimates 1995 (Cmnd 2800), Her Majesty's Stationery Office, London, 1995.

² Brigadier Andrew Pringle, 'BA 2000 – Towards and Army in the 21st Century', *The Future Battlefield*, Chap. 12.

³ Major General Edward G. Anderson III, 'Force XXI – America's Army of the 21st Century,' in *Ibid.*, Chap. 10; and Major General John Hartley, 'An Australian Army for the 21st Century', in *Ibid.*, Chap. 12.

⁴ A perspective on the RMA is provided by Admiral William A. Owen, in 'The American Revolution in Military Affairs', *Joint Forces Quarterly*, National Defense University, Washington DC, Winter 1995-96.

View Two

The second speculative view sees regular forces opposed by irregular forces such as terrorists or other non-state organisations. Such conflicts are likely to be drawn out campaigns characterised by raids and sporadic attacks rather than full scale battles. The British Army has considerable experience in dealing with this form of conflict, with operations in Malaya, Aden, Northern Ireland and Bosnia providing examples. The key to success in such campaigns is winning the 'hearts and minds' of the civilian population, and military operations are just one element of a broader campaign. The need to protect a wide range of potential targets from unpredictable attack will require widely dispersed but strong defensive forces. These forces will require secure bases from which to operate, but will also need the capability to conduct offensive action. This places a premium on forces capable of rapid tactical mobility, and, as in the past, there is likely to be considerable demand for transport helicopters in this kind of operation. The political sensitivity of such operations will also demand precision firepower, although fewer weapon systems will be required than for view one operations.

Deductions

These views represent only the extremes of likely conflict, and it is recognised that most future conflict will probably involve a complex interplay of both views. It is clear that force structures will need considerable versatility if they are to be capable of responding to the diversity of operations. Nonetheless, the British Army has identified two principles on which to base force structure decisions; these are:

- it is easier to equip for View One and adapt for View Two, but:
- weapons and forces structures that offer utility across the spectrum should be favoured.¹

Given the diversity of possible operations, it will be necessary to be able to generate different force structures tailored to the need. The largest army formation that the UK plans to deploy is the division, and this will form the basis of future land force groupings; however, the division is not seen as permanent structure, but would be force-packaged for each operation.² The high levels of mobility offered by helicopters make them well suited to a wide range of roles across the spectrum of future conflict; consequently, they are likely to be in considerable demand. It will therefore be essential to organise them into units that exploit their capabilities to the full.

ECONOMIC FACTORS

Defence expenditure in many Western nations has been in decline for many years and the trend looks set to continue. British defence spending fell by about 30 per cent in

¹ Major General M.D. Jackson, 'The Army Contribution to the Air Battle', in *Air Power & Space – Future Perspectives*, Air Power Conference 12-13 September 1996, Queen Elizabeth II Conference Centre, London.

² *Ibid.*, p. 2.

real terms in the decade between 1985/86 and 1995/96,¹ and, in the absence of a clearly identifiable threat, there seems little likelihood of a reversal in this trend. The downward pressure on defence expenditure has led to a number of ministerially endorsed initiatives to increase efficiency and allow the available resources to be focused on the front-line. These initiatives include the establishment of Agencies (principally in the support area) under the *Next Steps* initiative; the *Competing for Quality* programme, in which support activities are exposed to private sector involvement and competition; and the *Private Finance Initiative*, which seeks greater use of private sector finance and management expertise in the public sector. Many aspects of helicopter support have already been considered in the light of these initiatives, leading to a number of programmes to increase efficiency. However, the emphasis on preserving the front-line has meant that operational units have not been subjected to the same scrutiny. This may be partly because of the difficulty of determining meaningful performance indicators for front-line units. The latest initiative, based on resource accounting and budgeting under project CAPITAL, has wider applicability and is expected to highlight further areas for efficiency savings.² The aim is to focus on the delivery of outputs and their true cost. The difficulty of establishing meaningful measures of defence output may still make it difficult to apply the full rigours of the CAPITAL process to operational units, but the process should facilitate more straightforward cost attribution to defence activities.

Despite these initiatives and the change of government, there is likely to be continuing pressure to reduce costs and seek economies. Any opportunities to reduce infrastructure costs through economies of scale and the reduction of duplication and overlapping capabilities will need to be examined. This was made clear by the new Secretary of State for Defence, Mr George Robertson, who, speaking in the Defence Debate in Parliament, emphasised:

Obtaining greater efficiency from defence spending is an absolute central part of the Strategic Defence Review. I am personally committed to ensure that every pound spent by the Ministry of Defence is necessary for our defence and security. It is my duty to eliminate duplications, cut waste, look carefully at the functions of all MoD areas and its agencies to determine whether they are strictly necessary.³

Helicopters and their associated logistic support are expensive, so it is important to ensure that they are operated in an efficient manner commensurate with maintaining their operational effectiveness. Command and control arrangements will need to balance the sometimes-conflicting demands of efficiency and effectiveness.

CULTURAL FACTORS

In considering command and control arrangements of military organisations, the importance of human factors can be easily overlooked, yet they can be a powerful force for change, or, more likely, resistance to change. Any new arrangements for the command and control of battlefield helicopters would need to take account of this

¹ Keith Hartley, 'Economic Premise and Resource Availability', in *British Security 2010*, p. 222.

² Statement on Defence Estimates, 1996, p. 88.

³ Mr George Robertson, Secretary of State for Defence, 'Britain's Defence – Securing our Future Together', Ministry of Defence Press Release 154/97, London, 27 October 1997.

reality. Human factors in the armed forces are reflected to some degree by the culture of the organisation, based on shared values and beliefs of individuals within the organisation.¹ Kilman, Saxon and Serpa have described the concept of organisational culture as follows:

Culture is to the organisation what personality is to the individual – a hidden yet unifying theme that provides meaning, direction, and mobilisation.²

In a large organisation, such as the armed forces, complex webs of organisational groupings develop, each with its own culture. Organisational cultures tend to be strongest at lower levels in the organisation (eg. squadron/regimental level) and at the macro level (eg. RAF/Army level), where shared values are more easily identified. On the other hand, few individuals would feel a strong sense of belonging to an RAF group or an Army division, which tend to be diverse groupings with broad tasks; consequently, organisational culture is much less strong at this level. In the British Army, the organisational paradigm of the regiment has proved enduring, despite the fact that it has become somewhat of an anachronism in modern warfare.

Any attempt to change an organisation that fails to take account of culture is likely to face strong opposition from within, and may lead to individuals attempting to undermine the new organisation.³ The Canadian Defence Force faced this problem when it attempted rapid integration of the three Services in 1965. According to some observers, the exercise was a disaster: morale plummeted, *esprit de corps* was lost and large numbers of personnel resigned.⁴ However, culture is a dynamic process and over time, organisations can adapt to their new environment. What is needed is a process to allow a culture supportive of change to evolve.

In the case of battlefield helicopters, this would probably be best achieved by preserving organisations where unit loyalty is strongest (ie. squadrons and regiments) and focus change at higher levels in the organisation. Nonetheless, for the foreseeable future, affinity to the individual Services is likely to remain a powerful motivator in the British armed forces, and it is doubtful whether many individuals would readily change Service. Certainly this was the experience in the Australian Defence Force, when only five RAAF personnel transferred to the Army with the change of ownership of the helicopters.⁵

Since its inception, the RAF has developed a separate and distinct culture from the Army. Cultural paradigms for the Army and the RAF are proposed at Figure 8.1

¹ Edgar Schein, 'Organizational Culture' in W.L. French, C.H. Bell and R.A. Zawacki (Eds), *Organizational Development and Transformation: Managing Effective Change*, 4th Edition, Irwin, Burr Ridge, Illinois, 1994, p. 147.

² Kilman, C.R., Saxon M.J., and Serpa R. (Eds), *Gaining Control of the Corporate Culture*, Jossey-Bass, San Francisco, 1986, p. ix.

³ Lieutenant Colonel M.L. Phelps, RAA, 'The Australian Army's Culture: from Institutional Warrior to Pragmatic Professional', in *Australian Defence Force Journal*, No. 123, March/April 1997, p. 42.

⁴ Air Marshal David Evans, *A Fatal Rivalry: Australia's Defence at Risk*, Macmillan, Melbourne, 1990, p. 112.

⁵ Information provided to author by former RAAF helicopter pilots.

Army Cultural Paradigm	RAF Cultural Paradigm
Loyalty to Regiment	Loyalty to Squadron
Leadership	Technical skill/professional mastery
Team work	Individuality
Institutional Force	Pragmatic Force
Mission Command	Detailed Instructions
All Warriors	Aircrew Warrior

Figure 8.1 Army and RAF Cultural Paradigms

Today, these differences can still be discerned between Army Air Corps (AAC) and RAF SH squadrons. Consistent with the army ‘all warrior’ ethos, aircrew in the AAC are still considered to be soldiers first and aircrew second. Accordingly, AAC aircrew are required to fulfil a range of regimental duties in addition to their flying task; along with this go responsibilities for unit administration and management of men. Additionally, AAC personnel are expected to maintain a range of traditional army skills (drill, PT, and field-craft). While some of these skills are vitally important to maintain for a field organisation, they can only be achieved at the expense of other duties, such as aircraft maintenance, and it becomes a matter of judgement as to how much time to devote to each task.

The dilemma of sustaining the ‘soldiers first’ ethos against the requirement of maintaining highly complex helicopters has been faced by US Army aviation. However, judging by correspondence in the US Army Aviation Digest, the issue may not have been fully resolved. One Master Sergeant describes the challenge:

The overall cost to Army aviation [of its soldiers first ethos] is excessive workload, poor productivity, and poor quality of maintenance performed. My most vivid memories after a full day of ‘weekly mandatory training’ are closing the hangar doors, turning on the lights, and getting ready for the long haul.¹

This view seems to have been supported by a US General Accounting Office investigation into logistic support problems associated with the Apache helicopter, which reported that:

Several of the Army’s practices weaken the capability of already overburdened Apache maintenance units ... Apache maintenance personnel spend only about 30 per cent of their day performing maintenance on the Apache. The remainder of their time is spent on other required duties such as physical training, guard duty, motor pool detail, and rifle qualifications. ...The prevailing philosophy within the Army is that maintenance personnel are

¹ MSG Edward C. Farrar, ‘Feedback - Are we soldier first?’, *US Army Aviation Digest*, January/February 1995, p. 3.

soldiers first and Apache maintainers second. As a result, the maintenance of helicopters does not get the full attention of maintenance personnel, and availability rates suffer.¹

The converse of course is that if maintenance personnel devoted more time to maintenance tasks, their military skills would suffer. A balance needs to be found. In RAF SH squadrons, the focus for aircrew remains attainment of professional skills directly related to flying, whilst technical staff concentrate on the maintenance of aircraft. This is consistent with the air force ethos of 'professional mastery'. Nonetheless, SH personnel also devote time to other military skills (especially field-craft). In practice, the difference between RAF and Army units is merely a matter of emphasis.

In many respects helicopter units are probably closer in culture to each other than many other elements of the RAF and Army (eg. fighter squadrons and tank regiments), not least because of their common working conditions. Indeed, as AAC aircraft are becoming more technically complex, and SH squadrons are becoming increasingly focused on the totality of their operational missions, their cultures appear to be converging. This convergence in attitudes is likely to increase as the three Services work together more, and through the influence of the Defence Helicopter Flying School, where helicopter aircrew from all three Services train and socialise together. However, it is also possible that as helicopter squadrons move closer together, they could become alienated from other elements within their Services. More likely though, the process should result in increased mutual understanding between the Services and enhanced operational efficiency. Organisational arrangements should capitalise on this development.

TECHNOLOGICAL FACTORS

Technological developments will also have an influence on organisational arrangements. Rapid advances in technology can have a dramatic effect on military capability, and the maintenance of a technological edge has often been crucial to operational success in past campaigns. To exploit fully the advantages of new technology, organisations, training and doctrine all need to be examined to identify scope for radical new approaches to the employment of weapons systems, otherwise there is a risk of limiting developments to merely incremental improvements based on existing capabilities.

It is planned to introduce new helicopters to each of the Services around the turn of the century, and a number of ageing types will be due for replacement in the following years. Technological improvements in helicopters will bring new capabilities, facilitating greater utility and wider employment opportunities. For example, attack helicopters will be capable of fulfilling tasks previously undertaken only by fixed wing aircraft, such as battlefield air interdiction. Additionally, attempts to reduce the number of types in service could lead to greater overlap in aircraft ownership. It is therefore necessary to briefly examine some of the capabilities that may be available from these technologies to determine what influence they might have on future command and control arrangements.

¹ United States General Accounting Office (GAO) Report to Congress, GAO/NSIAD 90-294, *Apache Helicopter: Serious Logistic Support Problems Must Be Solved to Realize Combat Potential*, General Accounting Office, Washington DC, 28 September 1990, p. 45.

Attack Helicopters

The introduction of the Westland AH-64 Apache Attack helicopter to the Army will offer a significantly increased operational capability over the Lynx Mk 7, which it is due to replace. Compared to the Lynx, the Apache will offer increased firepower, survivability and an improved ability to conduct operations at night and in adverse weather. With a weapons load of eight anti-armour missiles, 1,200 rounds of 30mm cannon and up to 36 rockets, and able to operate over ranges of up to 200 kilometres, the Apache will offer utility against a broad range of targets and be able to dominate large areas. An array of defensive aids, including radar warning receiver, signature suppression and active counter-measures will enhance its inherent survivability, while its sophisticated surveillance and target acquisition devices could be used for a variety of tasks, from monitoring compliance with cease-fire agreements to tracking suspects. Consequently, the Apache will have utility in a wide range of conflicts and is therefore likely to be in high demand for operational deployment.

Maintenance of the Apache and its sophisticated weapon systems is also likely to be very demanding, especially in the field environment. The maintenance philosophy of the AH-64 is based on replacement rather than repair of faulty parts using Line Replaceable Units (LRUs), which should ease the first-line task, but places considerable demand on logistic supply.¹ It appears that the US Army underestimated the support requirements for the AH-64A, which in its early years of service suffered availability rates well short of the goal.² Specifically, it would appear that, by comparison to the US Marine Corps and USAF, US Army grossly under-resourced its maintenance facilities, with too few maintenance personnel to properly support the aircraft.³ While the British Army should be in a position to capitalise on this experience, REME aircraft technicians will need to acquire new skills in areas such as radar and displays technologies; it is interesting to note that RAF technicians already have expertise in these areas from their experience with fast-jet aircraft. The Apache will also demand high levels of expertise from the aircrew if its capabilities are to be fully realised. Again, many of the skills associated with the Apache's weapon systems are available in the RAF, but others, such as those associated with anti-tank helicopter tactics are more common in the Army.

Support Helicopters

The introduction of the utility version of the EH 101 to the RAF support helicopter fleet will offer increased capabilities over the current Puma/Wessex, especially in its ability to conduct missions at night and in adverse weather. It will also have greater capability in terms of lift and range as well as features to improve survivability. In the longer term, there will be a need to replace the Royal Navy Commando Sea Kings, and if this requirement were filled by the utility version of the EH 101, there would be a duplication of ownership between the Royal Navy and RAF. Likewise, if the Puma and Wessex operating in the light support helicopter role and Lynx operating in the light battlefield utility role were replaced by a common type, there would be duplication of ownership between the RAF and Army. Clearly, this would be

¹ Major General S.W. Stj Lytle, 'British Army Aviation in the 1990s', *Royal United Services Institute Journal*, Vol. 139, No. 2, April 1994, p. 31.

² GAO Report to Congress, *Apache Helicopter*, p. 2.

³ *Ibid.*, p. 44.

inefficient, and a rational arrangement, untainted by Service parochialism, will be required.

CONCLUSION

There are many factors that shape command and control arrangements for battlefield helicopters. Despite changes in the strategic environment, there appears to be a continuing role for both transport and attack helicopters in a wide range of operations across the spectrum of conflict. However, because of the diversity of potential future operations, their exact nature cannot be reliably predicted; consequently, it is not possible to anticipate the combination of forces required. It is axiomatic that control structures will need to be flexible and adaptable.

There is likely to be continuing pressure on the defence budget and therefore a continuing need to search for efficiencies. The high cost of helicopters and their logistic support will mean that there are unlikely to be sufficient to satisfy all demands, so it will be necessary to establish a command and control system able to allocate priorities for their employment.

The introduction of new helicopter types will place additional demands on existing structures, and there is scope to capitalise on existing expertise across the Services. Additionally, there is likely to be greater commonality of helicopter types operated by each of the three Services.

The key conclusions of this chapter are that, in addition to providing combat effectiveness, future command and control arrangements for battlefield helicopters need to be:

- Flexible and adaptable.
- Cost efficient.
- Tailored for the 'human factor'.
- Rationalised across the Services.

CHAPTER NINE

THE UK HELICOPTER FORCE - A JOINT APPROACH

The one great thing to which you should at all times apply your thought and brains is the expansion of the power of materiel and personnel without increasing either.

Sir Hugh Trenchard¹

INTRODUCTION

Examination of the command and control arrangements for battlefield helicopters in the UK has indicated that present arrangements may be sub-optimal when viewed from a defence-wide perspective. Moreover, with the establishment of joint structures for both operations and support, present arrangements may appear somewhat anachronistic.

The question remains, though, how should the UK's helicopter force be organised? This chapter considers the options available for future organisational structures of the UK's military helicopters. Firstly, some of the basic considerations for command and control are reviewed, establishing a framework for helicopter organisations. Next, arrangements for the command and control of battlefield helicopters at the operational level are considered by examining their principal roles in most appropriate command structures. Options for the higher management of helicopters are then considered, dealing with the thorny subject of ownership. Finally, some proposals to improve the command and control of battlefield helicopters in the UK outlined.

BASIC CONSIDERATIONS

One of the challenges of the complex, multi-dimensional threat environment of the future is in devising organisational structures suited to the wide range of possible operations. Maintaining a full span of capabilities for all possible contingencies is unlikely to be affordable within a steady or declining defence budget, yet there may not be time to raise forces optimised to deal with specific situations. This demands force structures that offer broad utility and can be adapted to the specific circumstances once they emerge. Thus, command and control arrangements will need to be highly flexible, and the monolithic structures developed for the specific threat

¹ Sir Hugh Trenchard, in his opening address written for the opening of the RAF Staff College, Andover 4 April 1922, quoted in John Downey, *Management in the Armed Forces*, McGraw-Hill, London, 1977, p. 162.

environment of the past may be quite inappropriate. A common approach to devising force structures in a 'no-threat' environment is to structure for the more demanding operations, represented by mid to high-intensity war-fighting, and adapt for lower intensity operations: the so called 'Train High and you can Fight Low' approach.¹ However, this approach, which portrays high/low intensity conflicts as a dichotomy, is credible so long as there remains a reasonable risk of having to conduct mid to high-intensity combat operations. A more sophisticated analysis highlights the importance of maintaining the capability for high intensity conflict even in what may be perceived as low intensity operations.² On this basis, there is a strong case to be made for maintaining force structures capable of high intensity operations.

However, there are limits to this approach. Even in an era when the defence of the nation against external threats was the primary force structure determinant, it was unnecessary to structure the entire defence organisation for the combat task. In the strategic environment of more diffuse threats, the distinction between operational forces and the higher level management functions associated with maintaining and administering the forces is even clearer. To some degree, this has already been recognised in the UK, with increasing emphasis on joint command structures for operational employment, with the individual Services responsible for raising, training and sustaining forces. However, since the Services retain an operational role in some circumstances, and many of the higher management functions are organised on a joint basis by the Ministry of Defence, the two aspects are not clearly delineated. Moreover, in the case of helicopter forces, these arrangements are further complicated by the complex interaction of command and control between the Services.

Although there is inevitably overlap between the operational and management functions, it is important to recognise that they each require different command and control philosophies.³ For combat forces, the focus is necessarily on shorter-term objectives and there is a clear need for a hierarchical structure with clear lines of authority, and an environment that encourages unit cohesion and *esprit de corps*. However, at higher management levels, where longer-term concerns predominate, there is a greater need for communication across organisational boundaries, consensus building, and financial awareness. Modern organisational theory suggests that hierarchies are not well suited to such environments and in the commercial sphere, there has been a trend towards networked or 'cybernetic' models of control for such organisations. The different cultural paradigms of the combat and non-combat environment also require different mind-sets, and may partly explain why officers raised in the combat environment abhor appointments in the Ministry of Defence.⁴ Nonetheless, it would be oversimplification to describe current military command and control structures as simple hierarchies.

Thus, whilst recognising that there will be overlap in functions between the operational and higher management levels, there are advantages in considering them

¹ Brigadier A.C.I. Gadsby, 'Do We Still Need Tanks?', *Royal United Service Institute Journal*, Vol. 142, No. 4, August 1997, p. 21. The British Army have adopted the principle of structuring for 'View One' (war-fighting) and building down according to the operational task, Army Doctrine Committee Paper, *Towards an Air Manoeuvre Formation*, Directorate of Land Warfare, Upavon, Wiltshire, 3 February 1997.

² Michael Codner, 'The United Kingdom's Strategic Defence Review: Strategic Options', *Royal United Services Institute Journal*, Vol. 142, No. 4, August 1997, p. 48.

³ For a more comprehensive perspective on this theme, see John Downey, *Management in the Armed Forces*.

⁴ Group Captain Al Campbell, 'The Role of the Joint Services Command and Staff Course', unpublished thesis for Royal College of Military Science, Shrivenham, February 1997.

separately. The approach here is to consider the forces structure best suited to meet operational requirements first, and then consider how this might fit into higher-level management structures.

OPERATIONAL COMMAND AND CONTROL

To establish the most appropriate operational command and control arrangements for battlefield helicopters, it is useful to consider their roles within the framework of command styles set out in Chapter One. Tightly coupled systems are strongly dependent upon one another and there is strong correlation between the component parts of the system; consequently, disturbances tend to propagate throughout the system. These attributes are reversed in loosely coupled systems.¹ The degree of complexity in the interaction between systems can be characterised as linear or complex, with linear interactions representing those in which most arisings are predictable and routine, while in complex interactions, sequences are unfamiliar and outcome unpredictable.

It seems likely that most attack helicopter operations will take place in an unfamiliar environment where outcomes are unpredictable. Thus, a decentralised style of command, such as mission command will be most appropriate for these operations. However, they may also have a role in attacking targets where the outcome is more predictable and better results are achieved through coordinated efforts. In these circumstances, a more tightly coupled system, such as the Air Tasking Order process may be more appropriate. Consequently, no single style of command will always fit the bill, and flexibility will be required to ensure that the command and control arrangements are tailored to the circumstances.

Most utility and support helicopter operations, such as those involving combat support and combat service support will take place in a reasonably familiar and predictable environment. In these circumstances, either centralised or decentralised arrangements can be applied, depending on the degree of efficiency/responsiveness required, but to provide the greatest flexibility and least risk, command and control arrangements should be loose. Some operations will be less predictable (eg. air assault), and in these circumstances, a more decentralised command and control process will be required. The location of these helicopter roles against the various command and control regimes is shown diagrammatically at Table 9.1:

Having established a theoretical basis for command and control, this can now be applied to the UK helicopter fleet. This is most clearly understood by considering the main categories of helicopters in turn.

¹ Major Steven M. Rinaldi, USAF, *Beyond the Industrial Web: Economic Synergies and Targeting Methodologies*, School of Advanced Airpower Studies, Maxwell Air Force Base, Alabama, April 1995, pp. 8-9.

		COUPLING	
		Tight	Loose
INTERACTION OF ELEMENTS	Linear	Command-by-Plan Centralised control Some attack helicopter operations	Either centralised or decentralised Most utility and support helicopter operations
	Complex	Command-by-Direction Neither centralised nor decentralised	Command-by-Influence Decentralised Most attack helicopter operations Some utility and support helicopter operations

Table 9.1. Command and Control Options for Battlefield Helicopters

Attack Helicopters

Attack helicopters can contribute to the joint battle through important, and in some instances unique, roles. In common with fixed-wing aircraft, they can provide fire support to surface forces (close air support) or attack targets at depth (air interdiction) either independently or in combination with other weapons systems (Joint Air Attack or Composite Air Operations). However, using attack helicopters merely to supplement or replace fixed-wing aircraft in these roles may fail to exploit their full potential. Similarly, using attack helicopters simply to provide additional fire support to surface forces fails to exploit their manoeuvre potential. While both these applications may at times be important, even critical, the full capabilities of attack helicopters will be best exploited if they are concentrated, where their fire power can be massed and their inherent manoeuvrability exploited to conduct *air manoeuvre*. This can only be achieved if attack helicopters are grouped within an organisational framework that has the skills and resources to plan, fight and sustain such operations.¹

The introduction of the WAH-64 Apache provides the UK with a range of organisational options for employing attack helicopters. The most straightforward option would probably be for them simply to replace the Lynx/TOW anti-tank helicopters in their existing organisational structures. This would mean dispersing the Apaches among the Army Air Corps regiments, with perhaps two regiments of 16 Apaches assigned to 24 (Air Mobile) Brigade, and one regiment assigned to either 1 Armed Division or 3 Mechanised Division. Double earmarking one of the squadrons, as is currently planned would achieve support to the Royal Marines.² Although the combat capability of the units concerned would be enhanced considerably over that provided by the Lynx, dispersing attack helicopters in this manner would not create an organisation capable of conducting air manoeuvre. Individual regiments do not have the capacity to coordinate and execute current operations while simultaneously planning future operations. Moreover, the relatively small number of attack

¹ Army Doctrine Committee Paper, *Towards an Air Manoeuvre Formation*, Directorate of Land Warfare, Upavon, Wiltshire, 3 February 1997.

² Rear Admiral Terry Loughram, 'Projecting Power From the Sea: the RN Contribution to the Air Battle', *Air Power & Space – Future Perspectives*, Air Power Conference, Queen Elizabeth II Conference Centre, London, 12-13 September 1996.

helicopters in each regiment would not be able to sustain air manoeuvre operations. Additionally, if organisational decentralisation were matched with physical dispersion, there would be additional support costs.

Alternatively, attack helicopters could be organised along air force lines in a similar manner to other air power assets such as offensive air support aircraft. Under this arrangement, the Apaches could be organised into squadrons under the command of an RAF group within Strike Command. One advantage of this arrangement would be that the skills and resources necessary to support a sophisticated helicopter like the Apache and its advanced weapon systems are readily available in the RAF. However, because of the way in which helicopters interact with the ground environment, an intimate knowledge of land warfare is vital for attack helicopter aircrew. While some might argue that this requirement can only be met by Army pilots, the key issue is the quality and adequacy of the aircrew's training. Nonetheless, it is probably safe to assume that, at present, this knowledge is more readily available in the Army than the RAF. Moreover, unless the current generation of Army Air Corps pilots transferred to the RAF, the expertise they have gained in anti-tank operations would be lost. Finally, the RAF does not currently have the organisational framework capable of orchestrating air manoeuvre and would need to develop the necessary staff procedures if this capability was required.

A third alternative involves concentrating attack helicopters into a single organisation, which, in the case of the UK's Apaches would constitute a formation of about brigade size. Concentrating the helicopters in an air manoeuvre brigade would provide the combat power and sustainability of a manoeuvre force, while establishing a brigade headquarters would provide an organisational framework capable of orchestrating manoeuvre and provide an appropriate level of command for such a potent force. It is therefore consistent with the air power principles of centralised control of air power at the highest practicable level, while providing a framework for employing the Army's philosophy of 'mission command'. This arrangement would also facilitate logistic efficiency, especially if the helicopters were geographically collocated (albeit tactically dispersed during operations).

It is envisaged that the brigade would include six squadrons of about eight Apaches, organised into two regiments, based largely on current Army Air Corps units, with the brigade infrastructure found from 24 (Airmobile) Brigade; the airmobile role could be transferred to, say, 5 (Airborne) Brigade. The regimental headquarters would be responsible for the detailed conduct of current operations, while the brigade headquarters dealt with future planning. Since attack helicopter operations would often require support from ground troops, for example, to secure forward arming and refuel points, they would also need to be available to the brigade. To maintain the momentum of the air manoeuvre operations, these troops would need to be airmobile infantry and ideally should be integrated with the brigade, along with a limited number of transport or utility helicopters. The brigade would also need dedicated artillery support as well as combat support and combat service support assets, and should therefore be regarded as an 'all arms' manoeuvre formation. Some tasks might also require the brigade to take on additional combat and combat support assets, such as additional artillery and support helicopters, which could be task organised from outside as necessary. The outline structure of a possible air manoeuvre brigade is shown at Figure 9.1.

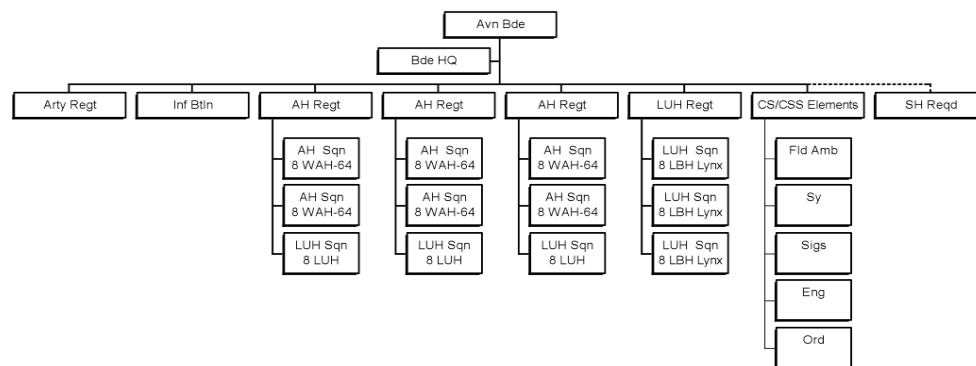


Figure 9.1: Proposed Organisation of a UK Air Manoeuvre Formation

Employing the Air Manoeuvre Brigade

Like all elements of a joint force, the air manoeuvre brigade should be available to the joint force commander to employ as he sees fit. In most circumstances, this would probably be as one of the manoeuvre elements of the land component commander, to be used in synchronisation with his ground manoeuvre formations as part of his over scheme of manoeuvre within his area of operations/battlespace. It is assumed that for national operations the land component commander will be one of the divisional commanders. However, in circumstances where the elements of the air manoeuvre brigade can be utilised beyond the land component commander's area of operations, the joint commander should be able to apportion the brigade's assets to other component commanders. For example, a number of attack helicopters might be assigned to the air component commander for missions such as the suppression of enemy air defences, while others could be assigned to the maritime component to support an amphibious landing. Similarly, the brigade's helicopters could be placed in support of ground units for specified missions or periods; its assets could also be task organised with an airmobile brigade to conduct air assault. However, maintaining the operational integrity of the air manoeuvre formation would often be an important consideration. Routinely hiving off assets could lead to the combat power of the brigade being whittled away through attrition, and should therefore only be contemplated with full cognisance of the implications and risks of debilitating the brigade.

The brigade's helicopters would need to be integrated into the regional airspace control plan, but it would not be appropriate to control them routinely in the same way as other air power assets. While the highly centralised targeting methodology of the ATO process might be appropriate for high-speed fixed-wing aircraft operating over a wide area, it can stifle the flexibility of slower and shorter-range platforms such as attack helicopters. Successful air manoeuvre will often require the exploitation of fleeting opportunities on the battlefield, which demands a decentralised style control such as that practised under mission command.

The brigade would also provide an efficient organisation for maintaining readiness of attack helicopter units and sub-units to meet a wide range of operations short of high-intensity combat. This approach would be consistent with maintaining cadreised units capable of being tailored for specific operations. It would also ensure the availability of units for roulement to support protracted operations, such as those experienced in the UK's commitment to UN and NATO operations in the Former Republic of Yugoslavia. Another advantage during coalition operations is that the air manoeuvre would provide the UK with the capability to deploy a division with structure and combat power of a US Army division.¹

Utility and Liaison Helicopters

Utility and liaison helicopters, such as the Lynx and Gazelle are likely to be in considerable demand by a wide range of units in an operational theatre. Centralised tasking of these helicopters would increase their efficiency and ensure that they were assigned to the highest priority missions. However, many utility and liaison tasks require a rapid response and it may not always be possible to achieve this with a

¹ Army Doctrine Committee Paper, *Towards an Air Manoeuvre Formation*, Directorate of Land Warfare, Upavon, Wiltshire, 3 February 1997.

centralised arrangement. Moreover, there are distinct operational advantages if the aircrew are fully conversant with the disposition and procedures of the units they are supporting. These requirements will often be best met by dispersing utility and liaison helicopters to the level at which optimum use of their inherent flexibility can be made, which will often be to the individual brigades and command headquarters. However, this would depend on the supported unit having the necessary communications and knowledgeable staff to control the helicopters. To provide maximum logistic efficiency and effective supervision, the helicopters and their crews should remain under command of an aviation organisation and assigned to supported units under operational or Tactical Control as appropriate. The air manoeuvre brigade, which would also incorporate a number of dedicated utility helicopters, would be the most appropriate parent organisation for these helicopters.

Support Helicopters

In common with utility and liaison helicopters, support helicopters, such as Merlin, Chinook and Puma, are likely to be in considerable demand by a wide range of units throughout an operational theatre. However, in contrast to utility and liaison helicopters, the advantages of centralised tasking to exploit more fully the greater lift capacity of support helicopters generally outweigh the benefits of decentralisation. There are arguments in favour of placing support helicopters under the command of the airmobile brigade, which might improve the responsiveness of the brigade and improve mutual understanding between the airmobile troops and the support helicopter crews. However, the arguments are less compelling for transport helicopters than they are for attack, liaison and utility helicopters. During an airmobile mission, large numbers of transport helicopters are required for the main fly-forward of troops, but only a limited number are required for subsequent operations. Consequently, transport helicopters are unlikely to be continuously employed in the airmobile role and providing them as a dedicated asset is an inefficient use of their capability. Even the US Army, which, by UK standards, has a tremendous profusion of helicopters, provides dedicated transport (assault) helicopters only in the 101st Airborne Division (Air Assault). In other US Army divisions, the majority of assault helicopters are retained at corps level and allocated to units with the greatest need. This principle also seems appropriate for the UK; however, it does not rule out support helicopters being placed in support of specific units for limited periods as the situation demands.

To coordinate logistic support and provide the necessary tasking infrastructure, support helicopters should be organised into a single group based on the present Support Helicopter Force Headquarters. It is envisaged that the group would be similar to an aviation group in the US Army and be commanded at the brigadier/air commodore level. Semantically, it may be better to identify the group as a transport helicopter group since this better conveys its function than the potentially misleading term support helicopter. For large-scale deployments, it is envisaged that the group would be assigned under the Operational Control of the appropriate land force commander (eg. the commander of the UK division for national operations or commander ARRC for NATO operations), but for smaller deployments, elements of the group might be deployed under operational or Tactical Control of the appropriate joint commander. The group would normally operate in a combat support/combat service capacity, providing support to combat and service units and would not be expected to operate as a manoeuvre formation. Most transport helicopter missions

would be conducted as individual tasks, although for particular operations, the helicopters could be assigned to specific units (eg. the air manoeuvre brigade or airmobile brigade) under tactical command. For deployments where transport helicopters operations were the main focus of activity, such as a major relief effort or evacuation mission, the group should have the capacity to lead the operation with support from combat elements as necessary.

To facilitate efficient logistic supportability, the Group's helicopters should be organised into units based on aircraft type. It is envisaged the Chinooks would form a medium support helicopter wing (or battalion) of three squadrons based on the command infrastructure of RAF Odiham, while the Merlins and Pumas would form a light support helicopter wing (or battalion) of two squadrons based on RAF Benson. Command and control of the Royal Navy Commando Sea Kings is a thorny issue. While the dedicated support they provide to the Royal Marines undoubtedly improves the combat capability of that brigade, there are insufficient helicopters for other infantry to enjoy the same level of support. Organisational, economic and doctrinal principles suggest that these helicopters should be integrated with the rest of the support helicopter force and allocated to meet defence-wide priorities. On balance, however, the specialised requirements of amphibious warfare probably justify the dedication of these assets, but there may be scope for closer integration with the remainder of the support helicopter force. This might include placing elements of the Commando Sea King force under the Operational Control of the transport helicopter group for certain operations. There are also advantages in providing dedicated support to other specialist units such as Special Forces and search and rescue.

Special Forces

At present, helicopters of all three Services provide support to Special Forces, but they are based at separate locations and operate to different doctrine and regulations. Operational considerations, including the need for operational security and closely integrated plans, argue for providing dedicated helicopter support to Special Forces. Against this are the additional logistic and support costs of operating the various helicopter types away from the remainder of their force. Moreover, integrating the helicopters into the Special Forces organisation would impose significant support overheads. Forming a tri-Service special forces wing within the transport helicopter group would provide the organisational infrastructure to improve coordination of helicopter support without the need to burden the Special Forces organisation with the necessary support activities; the wing could also coordinate fixed-wing support for special forces. Although it would remain part of the transport helicopter group, the wing should be placed under the Operational Control of the Director Special Forces for operations and training. Ideally, the various helicopter types would be permanently collocated, but support costs may make this prohibitively expensive, in which case, they should operate as discrete units on their main type base.

Search and Rescue

There would also be logistic and organisational benefits from including the RAF's search and rescue Sea Kings in the transport helicopter group. This would also provide a more logical focus for the development of a combat search and rescue capability in the UK armed forces. During peacetime, it is envisaged that the Sea Kings would normally be placed under the Operational Control of 11/18 Group, but

they could be assigned to any operational commander for operations. There are also arguments in favour of integrating the Royal Navy search and rescue Sea Kings into this organisation; however, because of their more specialised fleet support task, this may be unwarranted.

Northern Ireland

The extensive helicopter requirements in support of the security forces in Northern Ireland demand a dedicated organisation to coordinate their command and control. At present, this is provided by a combination of an Army Air Corps regiment, RAF Aldergrove and staff at the Headquarters Northern Ireland. The helicopter forces of these organisations and the Army Air Corps fixed-wing aircraft should be integrated into a single aviation battalion within the transport helicopter group, but under the Operational Control of the GOC Northern Ireland.

Naval Helicopters

Apart from the option to place the Commando Sea Kings under the Operational Control of the transport helicopter group, command and control of operational naval helicopters is beyond the scope of this study.

HIGHER-LEVEL MANAGEMENT

Rationalising the command and control of battlefield helicopters along the lines outlined above would provide effective and efficient operational structures, but would not, in itself, remove the duplication inherent in the current division of ownership between the Services. One of the options for rationalising these arrangements is to transfer battlefield helicopters into one of the Services and these options needs to be considered.

Single-Service Management

On the face of it, placing all battlefield helicopters within the Army might appear to remove duplication in command and control and align operational employment with ownership. With the benefit of hindsight, it does appear that the development of battlefield helicopters in the UK was not well served by the division of ownership between the RAF and the Army. However, while it may have been feasible for the Army to assume ownership of all battlefield helicopters when the Joint Experimental Helicopter Unit was dissolved in the late 1950s, there would be significant practical problems today. Australian experience with the transfer of battlefield helicopters from the RAAF to the Army in the 1980s suggests that the process of transfer would be far from straight forward and it is far from clear that there would be any long term gains in effectiveness to warrant the short-term costs. The transfer would require a huge expansion of the Army Air Corps, and even if large numbers of RAF personnel could be persuaded to transfer to the Army (an unlikely proposition), it is questionable whether the Army could attract sufficient high quality recruits to sustain such a large aviation organisation. Arguments that the Army would save money by employing

non-commissioned officers as pilots have been shown to be fallacious.¹ Moreover, a transfer would not reduce the need for inter-Service cooperation. Unless it was intended to duplicate a large number of aviation support functions (such as electronic warfare support, mission planning systems, aircraft component supply and aircrew safety equipment etc) the Army would still be dependent on the RAF for a number of services. Crucially, such a move is inconsistent with creating an atmosphere of trust and mutual understanding between the Services, which is such a vital element of developing increasing joint approaches to operations.

The maximum degree of rationalisation and greatest economies of scale could be achieved by transferring the aerospace assets of all three Services to a single Service. While this arrangement might offer the most efficient arrangement, it fails to take account of the human factors. Shortcomings in the delivery of air support by the RAF in the past convinced many in the Navy and the Army that they needed greater influence in the command and control air power, leading to the development of their own air arms in the 1920s and 1950s respectively. While the defence environment of the 1990s is very different from that of the 1920s and 1950s, with much greater coordination of tri-service requirements and improvements in joint command and control, it seems likely that any moves to return to a single Air Force in the UK would be strongly opposed by the Navy and the Army. Moreover, such a development is likely to run counter to the development of 'air mindedness' in the other Services, which would be detrimental to the operational effectiveness of the UK defence forces.

A third alternative would be to rationalise ownership across the Services through the establishment of a tri-Service Defence Helicopter Force. Such an arrangement would be in the spirit of increasing cooperation between the Services and would be consistent with recent developments such as the Permanent Joint Headquarters, Defence Helicopter Support Agency and the Defence Helicopter Flying School. It offers the opportunity to capitalise on the skills and expertise available within each of the Services and encourages moves towards 'best practice' in helicopter management. Under this proposal, the operational employment of helicopters would align with the 'user' service, with personnel provided from all three Services to operate and support the aircraft. Increasing commonality in the administrative procedures of Services should mitigate the administrative difficulties implicit in such an arrangement, although a degree of goodwill would be necessary for it to succeed. The precise structure of a defence helicopter force would depend on the outcome of a detailed investigation into the options; however, a possible outline structure is set out below.

Defence Helicopter Force

The proposed defence helicopter force would be responsible for the staff functions associated with management of all UK military helicopters; however, operational control of the helicopters would be vested in joint or single service commanders as determined by the Chief of Defence Staff. The principal operational elements of the force would comprise naval aviation, the air manoeuvre brigade and the transport helicopter group. Initially, these organisations would be likely to reflect their single-

¹ A study into the variation of helicopter crew ranks across the three Services found that although non-commissioned officers are marginally cheaper to employ than officers (in terms of capitation rates), this benefit was probably more than offset by the shorter return of service historically provided by non-commissioned officers. *Study into the Variations of Helicopter Crew Ranks Across the Three Services*, RAF Personnel and Training Command PTC/110010/20/2/Air Sec, 13 March 1996, p. 21.

Service heritage, but it is envisaged that over time there would be increased interaction between the groupings. An organisational chart of a possible UK defence helicopter force is shown at Figure 9.2.

It is envisaged that the Force would warrant a two-star commander, who should be nominated as a director general rather than a commander to emphasise the management nature of the organisation. The defence helicopter force headquarters would integrate the staff functions of Flag Officer Naval Aviation, Director Army Aviation and the RAF helicopter staff from Headquarters Strike Command and Headquarters 1 and 11/18 Groups. Apart from the establishment of an additional two-star officer, the organisation should lead to a reduction in the total tri-Service personnel requirement for helicopter staff. Key appointments should be filled based on the principle of ‘best man for the job’ rather than by Service affiliation, although some specific posts may need single-Service annotations (eg. Army Air Corps Regimental affairs).

The focus of the headquarters should be on long term issues, such as operational air worthiness, flying hours management, operational doctrine and training policy, leaving matters such as day-to-day tasking to the operational commanders. One benefit of the organisation is that it would provide a focal point for agencies supporting helicopters across the Services, such as the Defence Helicopter Support Agency and Defence Helicopter Flying School. There would also be greater harmonisation in future helicopter procurement requirements, reducing the risk of disjointed incrementalism brought about through replacement syndrome in each Service. In addition to its staff functions, the headquarters should also harmonise activities such as operational testing and evaluation, flight safety and flying standardisation across the Services. An outline structure of a possible defence helicopter force headquarters is at Figure 9.3

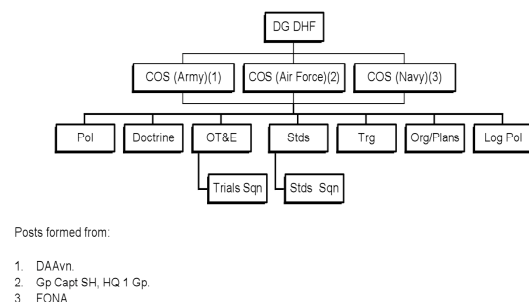


Figure 9.3: Proposed HQ Organisation of the UK Defence Helicopter Force

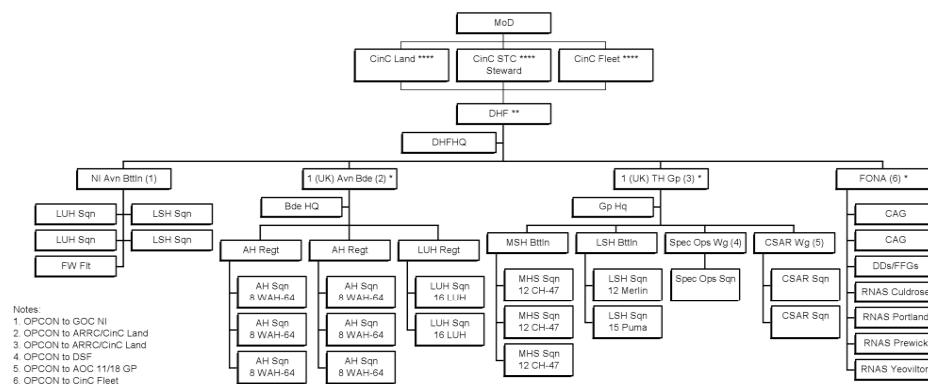


Figure 9.2: Proposed Organisation of the UK Defence Helicopter Force

Ownership of the defence helicopter force is a potentially divisive issue. Broadly, the options would be to place it under one of the single Service operational commanders in chief (Fleet, Land or Strike), under the Permanent Joint Headquarters, or as a directly administered Ministry of Defence organisation. Within the Ministry of Defence, there are several options for ownership, including the single-Service Chiefs of Staff or one of the Central Staff organisations. However, this approach would be inconsistent with moves to delegate authority from the Centre and would be unlikely to gain political acceptance. The Permanent Joint Headquarters seems to offer 'neutral' ground for the force, but the maintaining and sustaining functions of the defence helicopter force headquarters do not sit easily within the joint headquarters remit of planning and executing joint operations.

Placing the organisation under one of the commanders-in-chief is likely to be the most divisive option, but nonetheless might be considered. Several criteria could be used to judge which commander-in-chief should take ownership of the force, including factors such as the size of the current fleet, qualification to meet airworthiness responsibilities and Service core business. However, establishing appropriate weighting for these criteria is likely to be highly contentious and the result unlikely to be acceptable to all parties. Alternatively, the force could be placed under the 'stewardship' of one of the commanders-in-chief, with all three forming a senior management board. These arrangements would be similar to those established for the Defence Helicopter Support Agency, which has been widely accepted as a success.¹ The force would be responsive to all three operational commanders. Based on the core business of the defence helicopter force headquarters, Commander-in-Chief Strike Commander would appear to be the most appropriate steward; however, the role of the owners board would be crucial to allay fears by the other services of an RAF take-over. Establishing Service Level Agreements between the defence helicopter force and its main users would reinforce this.

Funding arrangements for the defence helicopter force would be a complex, but not unmanageable, issue. Similar arrangements to those that have been established for the Defence Helicopter Support Agency could be set up, with each Service funding one of the major operational elements of the force. However, tying funding to outputs in the operational units would be especially challenging, but no more so than under present arrangements. It is envisaged that the defence helicopter force would be a Higher Level Budget holder, with funds provided from the Top Level Budgets of Fleet, Land and Strike Commands. Operational units would be provided with Base Level Budgets. In this way, Commanders-in-Chief would be able to directly influence expenditure on the helicopters they employ; for example, if Commander-in-Chief Fleet sought additional expenditure on anti-submarine warfare helicopters, he could arrange for the funds to be provided to the defence helicopter force and 'ring-fenced' to meet his requirements.

¹ Brigadier (Ret) M. H. Carey, *Report on the Post-Formation Review of the Defence Helicopter Support Agency*, Vector Enterprises for Defence Helicopter Support Agency, Yeovilton, 19 January 1996, p. 6; and Mr James Arbuthnot, MP, Minister of Defence Procurement, 'Defence Helicopter Support Authority' *Hansard Written Answers*, 26 November 1996, Column 192.

CONCLUSION

Analysis of the roles of battlefield helicopters against the various styles of command and control showed that most attack helicopter operations were best suited to a decentralised style of command such as Mission Command; however, in some circumstances, a more centralised system would be more appropriate. Most utility and support helicopter operations could be centralised or decentralised, depending on the level of efficiency/responsiveness required.

Centralising attack helicopters into an aviation brigade would provide the most effective command and control structure to exploit their full capabilities, although arrangements would have to be sufficiently flexible to enable elements of the brigade to be employed separately. This organisation would also provide a suitable support structure for utility helicopters. Establishing a group organisation for support helicopters would provide a robust command and control organisation, and dividing the helicopters into wings or battalions based on aircraft type would facilitate an efficient logistic support structure. Certain helicopter tasks, such as Special Forces support and search and rescue would be best met by establishing specialised organisations with the capacity to develop doctrine and focus training. The geographic and political circumstances of Northern Ireland demand a separate organisation to provide local command and control, but only one central organisation for all helicopter types in the province is required.

The development of joint force structures in the UK armed forces has created an environment in which military requirements and tasks are increasingly considered from a defence-wide perspective. Battlefield helicopters represent one area of defence business where the interests of all three Services interact, and potentially offer a prescriptive model for defence organisations of the future. As the defence force transitions from the *specialist joint operations* to *synergistic joint operations*, the UK helicopter forces have the potential to lead the way to *coherent joint operations*.¹ To do this requires a move away from viewing force elements from a single-Service perspective and willingness on the part of the Services to sacrifice some of their influence in favour joint requirements.

The formation of a defence helicopter force along the lines suggested above has the potential to increase the combat capability of the UK's helicopter force without the need to increase either personnel or equipment, thereby meeting the challenge set out by Lord Trenchard.

¹ Specialised joint operations involve forces from different Services acting together towards a common operational objective, as was the case during Operation *Desert Storm*. Synergistic joint forces take integration to the next level employing common doctrine and mutually supporting forces towards common tactical objectives. Coherent joint operations are achieved when forces operate with common tactical and operational objectives with complete doctrinal and equipment interoperability, as enshrined in the US Joint Chiefs of Staff *Joint Vision 2010*. See General John J. Sheehan, USMC, 'Building the Right Military for the 21st Century', *Strategic Review*, Summer 1997, p. 10.