AEROSPACE CENTRE

# AIR POWER AND JOINT FORCES

## THE PROCEEDINGS OF A CONFERENCE HELD IN CANBERRA BY THE ROYAL AUSTRALIAN AIR FORCE

## 8-9 MAY 2000

EDITED BY WING COMMANDER KEITH BRENT, CSC

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# PREFACE

Papers have been printed as provided by the authors, with only minor changes to achieve some consistency in layout, spelling and terminology. The transcripts of the discussions that followed delivery of the papers have been edited for relevance, clarity and brevity. Copies of the edited transcripts were sent to authors for comment before publication.

Special thanks are due to my colleagues at the Aerospace Centre, Dr Alan Stephens and, in particular, Mrs Sandra Di Guglielmo for her highly professional editorial assistance.

Keith Brent
Aerospace Centre
Canberra

August 2000

# NOTES ON CONTRIBUTORS

**Air Marshal Errol McCormack**

Air Marshal Errol McCormack joined the RAAF in 1962 as an aircrew cadet and was commissioned in 1963. As a junior officer he served in Malaysia and Singapore during Confrontation, Thailand as part of SEATO forces, Vietnam during the Vietnam War and the United States on exchange duty with the US Air Force.

As a senior officer he completed staff appointments in operations and operational requirements and as Air Attache Washington and Deputy Chief of Air Force. He has commanded at unit (No 1 Squadron, F-111), wing (No 82 Wing, F-111) and operational (FPDA Integrated Air Defence System) levels.

Air Marshal McCormack has attended both RAAF and Joint Services Staff Colleges and served on the directing staff of both institutions.

**The Hon John Moore, MP**

The Hon John Moore was born in Rockhampton, Queensland. He attended the University of Queensland from which he graduated with a Bachelor of Commerce degree. He has also completed studies in accountancy. Prior to entering Federal politics he was a stockbroker and successful businessman.

Mr Moore joined the Liberal Party of Australia in 1964 and in 1966 became a member of the Queensland State Executive of the Party, a position he held until 1991 and again from 1994 to the present day.

In 1975 Mr Moore was elected to the House of Representatives for the Brisbane metropolitan seat of Ryan. From 1980-82 he was Minister for Business and Consumer Affairs in the fourth Fraser Government. During the Liberal-National Coalition's period in Opposition, Mr Moore served in the Shadow Cabinet and was Shadow Minister for a number of key portfolios.

In March 1996 Mr Moore was appointed Federal Minister for Industry, Science and Tourism and oversaw a wide-ranging review of the Industry portfolio. Following the return of the Howard Government in October 1998, Mr Moore was appointed Minister for Defence.

**Dr Gerard Henderson**

Dr Gerard Henderson is one of Australia's leading political and social commentators. He was educated at the University of Melbourne and is now executive director of The Sydney Institute. He writes a weekly column for *The Sydney Morning Herald* and *The Age*, and appears fortnightly in *The Courier Mail* and *The Sunday Tasmanian*.

Dr Henderson's books include *Menzies Child: The Liberal Party of Australia* (Harper Collins 1998); *A Howard Government?: Inside the Coalition* (Harper Collins 1995);

*Mr Santamaria and the Bishops* (Hale & Iremonger 1982); *Australia Answers* (Random 1990); and *Gerard Henderson Scribbles On* (Wilkinson Books 1993).

Between 1976 and 1979 he worked on the staff of Kevin Newman, a Minister in the Fraser Government. From 1984 to 1986 he was chief of staff to John Howard (who took over the Liberal leadership in September 1985).

Dr Henderson also comments on the ALP and the labour movement.

**Colonel Phillip S. Meilinger, USAF**

Colonel Phillip Meilinger is a graduate of the USAF Academy, Squadron Officer School, Air Command and Staff College and National Defence University. He holds an MA from the University of Colorado and a PhD from the University of Michigan. A command pilot, he has flown C-130s and HC-130s in Europe and the Pacific.

From 1991 to 1995 Colonel Meilinger served as the Dean of the School of Advanced Air Power Studies at Maxwell Air Force Base.

He is the author of *Hoyt S. Vandenberg: The Life of a General* (1989) and *10 Propositions Regarding Air Power* (1995), both of which are on the USAF Chief of Staff's professional reading list. He is also the editor and co-author of *The Paths of Heaven: The Evolution of Air Power Theory* (1997) and has published numerous articles on air power theory, history and employment.

Colonel Meilinger is currently a professor of strategy at the US Naval War College.

**Professor John R. Ballard**

Professor John R. Ballard is Chair of Defence Studies at Massey University, Palmerston North, New Zealand. He received a BS from the United States Naval Academy and spent 16 years in the US Marine Corps before becoming Professor of Military History and Strategy at the US Armed Forces Staff College in 1995. Professor Ballard earned his MA from California State University and his PhD from Catholic University. His military education included the Ecole Supérieure de Guerre InterArmées in Paris, France and the British Joint Warfare Course in Portsmouth, England. He currently serves as the reserve Deputy Director of Plans and Policy, US Marine Forces Pacific, Camp Smith, Hawaii.

Professor Ballard's academic interests include military history and the development of operational art. He has published articles in *Joint Force Quarterly*, the *Marine Corps Gazette*, *Military Review* and the *US Naval Institute Proceedings* and has presented papers and seminars worldwide on joint operational planning and military command and control. His books include *Upholding Democracy: the U.S. Military Campaign in Haiti 1994-1997* (Praeger, 1998) and *Continuity During the Storm: Boissy d'Anglas and the Era of the French Revolution* (Greenwood, 2000). Professor Ballard is currently working on a book length study of Operation STABILISE in East Timor.

**Dr Richard P. Hallion**

Dr Richard P. Hallion is the USAF historian, responsible for directing the USAF's worldwide historical and museum programs. He has broad experience in museum development, historical research, and management analysis.

Dr Hallion has been a curator of science and technology at the National Air and Space Museum, Smithsonian Institution; an adjunct professor at the University of Maryland; chief historian at the Air Force Flight Test Center, Edwards Air Force Base; visiting professor of military history at the Army War College; visiting professor of aerospace history at the Smithsonian; and a senior policy analyst on the Secretary's Staff Group in the Office of the Secretary of the Air Force.

Dr Hallion is the author of fifteen books and many articles on aerospace strategy and history, including most recently *Air Power Confronts an Unstable World* and *Storm over Iraq*. He has flown a wide range of military and civilian fixed- and rotary-wing aircraft.

**Air Vice-Marshal Peter Nicholson**

Air Vice-Marshal Nicholson joined the RAAF in 1968 after graduating from the University of Western Australia. He completed pilot training on the first all-through jet course and was posted to RAAF Base Williamtown for operational conversion to the Mirage aircraft. He subsequently served at Butterworth, Malaysia flying the Mirage in the tactical fighter role.

In 1973 Air Vice-Marshal Nicholson attended the Empire Test Pilots' School at RAF Boscombe Down where he won the McKenna Trophy as dux of his course. Following this training he was posted to the Aircraft Research and Development Unit where he served as a test pilot, flight commander and squadron commander. Air Vice-Marshal Nicholson has flown over 3000 hours on 40 different aircraft types, including the Mirage and F/A-18.

From 1988 to 1990 Air Vice-Marshal Nicholson was the inaugural Officer Commanding of RAAF Base Tindal and during this period was also the Sector Air Defence Commander of the Northern Sector. In 1992 he was the first RAAF officer appointed as Commander Northern Command where he was responsible for its reorganisation into the first integrated joint force command of the Australian Defence Force.

Air Vice-Marshal Nicholson is a graduate of the RAAF Staff College, the USAF Air War College and the National Defence College of Canada. He holds the degrees of Bachelor of Engineering and Master of Public Administration. He has held staff appointments in the Air and Engineering Staff of Air Force Office, as the Director of the Office of the Chief of the Air Staff and as the Director of Project Requirements for the Jindalee project. After a short period as Chief of Operations at Headquarters Air Command, he was promoted to Air Vice-Marshal and appointed Air Commander Australia on 9 April 1996.

Air Vice-Marshal Nicholson was appointed Head Strategic Policy and Plans, Australian Defence Headquarters on 9 June 1998. In this position he was responsible for the formulation of strategic policy, the development of military strategy and operational capability policy. His most recent appointment on 1 July 1999 as Head C4ISREW Capability Staff has seen a shift of focus to high technology policy direction and capability development for the ADF.

**Dr Stephen Badsey**

Dr Stephen Badsey MA (Cantab.) FRHistS is a senior lecturer in the department of War Studies at the Royal Military Academy Sandhurst, and also a Research Fellow at De Montfort University. Dr Badsey is a prolific writer and speaker on military matters, and is author, editor or contributor to more than twenty books. Among his books are *The Gulf War Assessed* with John Pimlott, and *The Media and International Security*.

Dr Badsey has made numerous appearances on television and radio, and acted as an adviser to television, video and print media. He has particular specialities in military-media relations, media portrayals of warfare, and modern military thought. He has been a research assistant at the Imperial War Museum, a tutor for the Open University, and a researcher and writer for television.

**Brigadier General David A. Deptula**

Brigadier General David A. Deptula is director for Expeditionary Aerospace Force Implementation, Deputy Chief of Staff for Air and Space Operations, Headquarters USAF. He is responsible for defining and advancing expeditionary aerospace power from concept to capability. He provides oversight of all EAF implementation efforts and is the Air Force focal point for developing and integrating expeditionary strategies, policy, guidance and plans to support the warfighter. His primary objective is to prepare the Air Force to execute its mission through a new Air Expeditionary Force structure.

General Deptula earned his wings in 1977 and has flown more than 2900 hours in fighter assignments. He has been an F-15C aerial demonstration pilot, weapons and tactics division chief, logistics group deputy commander, operations group commander, and a combined/joint task force commander. He has served on the staff of the Secretary of the Air Force and the Secretary of Defense.

During Operation DESERT STORM General Deptula was based in Riyadh where he was the principal planner for the coalition's offensive air campaign. From April 1998 to October 1999 he was commander of the Combined Task Force for Operation NORTHERN WATCH, based in Turkey, during which time he flew 82 combat missions over Iraq.

General Deptula holds a Bachelor of Science degree in astronomy, a Master of Science degree in systems engineering, and a Master of Science degree in national security strategy.

**Air Vice-Marshal Bob Treloar**

Air Vice-Marshal Treloar graduated as a RAAF pilot in 1968 and after converting onto Iroquois helicopters completed a tour in Vietnam in 1969-70, where he was mentioned in dispatches. He subsequently flew Sabre, Mirage and F/A-18 fighters, qualifying as a Fighter Combat Instructor and eventually commanding No 3 Squadron. As a group captain he also commanded No 41 Wing.

Staff positions have included Senior Operations Staff Officer at Air Command, Director-General Personnel-Air Force, and Director-General Force Plans and Programs in Headquarters ADF.

In April 1997 Air Vice-Marshal Treloar was appointed Commander Integrated Air Defence System at RMAF Base Butterworth, Malaysia. He assumed his current appointment as Commander Australian Theatre in May 1999. As COMAST, Air Vice-Marshal Treloar is responsible directly to the Chief of the Defence Force for planning and conducting ADF operations.

**Air Commodore John Blackburn**

Air Commodore Blackburn joined the RAAF in 1975 as an aircrew cadet. He completed pilot training in 1976, graduating as dux of his course and was posted to RAAF Base Williamtown for operational conversion to the Mirage aircraft, also graduating as dux of his course. As a junior officer he then flew operationally with No 77 Squadron at RAAF Base Williamtown and No 3 Squadron in Butterworth, Malaysia.

In 1980 Air Commodore Blackburn attended the Empire Test Pilots' School at RAF Boscombe Down where he won the McKenna Trophy as dux of his course. He subsequently served as an operational test pilot at the Aircraft Research and Development Unit until a posting to Washington with the Tactical Fighter Project Office, which managed the introduction of the F/A-18 aircraft into service with the RAAF. Three years in Washington were followed by a posting to Tulsa, Oklahoma where he was the Australian representative managing an F/A-18 simulation project.

On return to Australia, Air Commodore Blackburn was posted to RAAF Base Williamtown for operational conversion to the F/A-18 aircraft, graduating as dux of his course. He then flew operationally as Flight Commander No 77 Squadron (1988-89), Executive Officer No 77 Squadron (1989-91) and Commanding Officer No 77 Squadron (1994-96). As a senior officer his appointments have included Deputy Director Airspace Control in Headquarters Australian Defence Force, Officer Commanding No 41 Wing at RAAF Base Williamtown and Director-General Policy and Plans-Air Force within Air Force Headquarters.

Air Commodore Blackburn has attended both the Joint Services Staff College and the Australian College of Defence and Strategic Studies. He holds a Graduate Diploma of Defence and Strategic Studies, a Master of Defence Studies and has just completed a Master of Arts in Strategic Studies. He has accumulated over 3000 flying hours in over twenty aircraft types.

**Dr Alan Stephens**

Dr Alan Stephens is the RAAF Historian and a senior member of the Aerospace Centre (formerly the Air Power Studies Centre). Before joining the Centre he was a principal research officer in the Federal Parliament, specialising in foreign affairs and defence; prior to that he was a pilot in the RAAF. Dr Stephens is currently seconded to the University of NSW, Australian Defence Force Academy.

Dr Stephens is the author of numerous books and articles on security, strategy, air power, doctrine and military history, and has lectured extensively on those subjects throughout Australasia, South-East Asia, Europe and North America. His most recent book, a history of the RAAF, will be published by Oxford University Press in 2001.

**Wing Commander Ian MacFarling**

Wing Commander Ian MacFarling joined the RAAF in March 1977, after serving for twelve years in the Royal New Zealand Air Force. In the RNZAF he flew as a navigator on Canberra B(I)12 bombers, Sunderland Mk 5 flying boats, Bristol Freighters and P3B Orions. In the RAAF he flew as a tactical coordinator on P3B Orions on No 11 Squadron, and his last flying duties were at ARDU, where he completed the tour as flight commander. He has a total of 5650 flying hours as a navigator.

He has served with the Australian Defence Science and Technology Organisation, Headquarters Australian Defence Force, the University of New South Wales at the Australian Defence Force Academy, International Policy Division of the Department of Defence, the Joint Services Staff College as a member of the Directing Staff, and as Deputy Director of Studies at the Australian Defence College. He also participates regularly as the interpreter in bilateral ministerial-level meetings with Indonesian officials.

He is a graduate of the RAAF School of Languages, the Indonesian Air Force Command and Staff College, the Asia-Pacific Center for Security Studies in Honolulu, and the Royal Military College of Science, Shrivenham, England.

He was educated at Massey University in New Zealand, the University of Queensland, the Royal Melbourne Institute of Technology, and the University of New South Wales. His doctorate is in political science with a specific focus on civil-military relations in Indonesia.

**Air Vice-Marshal Alan Titheridge**

Air Vice-Marshal Alan Titheridge joined the RAAF in 1965 as an officer cadet and was commissioned on graduating from the RAAF Academy in 1968. He has a Bachelor of Science Degree in Physics from Melbourne University and a Masters Degree in Defence Studies from the University of New South Wales. He is a graduate of the Canadian Forces Command and Staff College and the USAF Air War College.

He has accumulated over 4500 flying hours in a variety of aircraft, including F/A-18s, Mirages, Macchis, Winjeels and CT4s, and is a Qualified Flying Instructor.

Air Vice-Marshal Titheridge has served in staff appointments at Williamtown, Glenbrook and Canberra, including Director-General Joint Operations and Plans in Headquarters Australian Defence Force. He has commanded No 77 Squadron, No 81 Wing, Tactical Fighter Group, and Air Command.

Air Vice-Marshal Titheridge was appointed as Deputy Chief of Air Force on 29 March 1999.

# ABBREVIATIONS

| | |
|---|---|
| AAF | Army Air Force |
| ACC | Air Component Commander |
| ACTS | Air Corps Tactical School |
| ADF | Australian Defence Force |
| ADFP | Australian Defence Force Publication |
| ADFWC | Australian Defence Force Warfare Centre |
| AEF | Air Expeditionary Force |
| AEW&C | Airborne Early Warning and Control |
| AEZ | Air Exclusion Zone |
| AI | Air Interdiction |
| AIDS | Acquired Immune Deficiency Syndrome |
| ALP | Australian Labor Party |
| AMRAAM | Advanced Medium-Range Air-to-Air Missile |
| AO | Area of Operations |
| APEC | Asia-Pacific Economic Cooperation (forum) |
| ARDU | Aircraft Research and Development Unit |
| ASAT | Anti-Satellite |
| ASEAN | Association of South-East Asian Nations |
| AST | Australian Theatre |
| ASTJIC | Australian Joint Intelligence Centre |
| ATACMS | Army Tactical Missile System |
| AUSLIG | Australian Survey and Land Information Group |
| AWACS | Airborne Warning and Control System |
| C2 | Command and Control |
| C2W | Command and Control Warfare |
| C3I | Command and Control, Communications and Intelligence |
| C4ISR | Command and Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance |
| C4ISREW | Command and Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance and Electronic Warfare |
| CAIRS | Close Air Support |
| CDF | Chief of the Defence Force |
| CENTCOM | Central Command (US) |
| CEP | Circular Error Probable |
| CHOGM | Commonwealth Heads of Government Meeting |
| CINC | Commander-in-Chief |
| CJCS | Chairman of the Joint Chiefs of Staff |
| CJTF | Commander Joint Task Force |
| COMAST | Commander Australian Theatre |
| COMSPTAS | Commander Support Australia |
| CONOPS | Concept of Operations |
| CONUS | Continental United States |
| COTS | Commercial-off-the-shelf |
| CPX | Command Post Exercise |
| CSIRO | Commonwealth Scientific and Industrial Research Organisation |
| CSP | Commercial Support Program |

| | |
|---|---|
| DER | Defence Efficiency Review [Australia] |
| DGPS | Differential Global Positioning System |
| DIA | Defense Intelligence Agency [US] |
| DJFHQ | Deployable Joint Force Headquarters |
| DMCN | Defence Mobile Communications Network [Australia] |
| DRP | Defence Reform Program [Australia] |
| DSP | Defense Support Program [US] |
| DSTO | Defence Science and Technology Organisation [Australia] |
| EAF | Expeditionary Air Force |
| EELV | Evolved Expendable Launch Vehicle |
| EEZ | Exclusive Economic Zone |
| EHF | Extra High Frequency |
| EU | European Union |
| FAA | Fleet Air Arm |
| FM | Field Manual |
| FPDA | Five Power Defence Arrangement |
| FSR | Force Structure Review [Australia] |
| GMS | Geostationary Meteorological Satellite |
| GPS | Global Positioning System |
| HAE | High Altitude and Endurance |
| HF | High Frequency |
| HIV | Human Immunodeficiency Virus |
| HMS | Her Majesty's Ship [UK] |
| HQAST | Headquarters Australian Theatre |
| HQNORCOM | Headquarters Northern Command [Australia] |
| HSI | Hyperspectral Imaging |
| ICBM | Intercontinental Ballistic Missile |
| IISS | International Institute for Strategic Studies |
| IMF | International Monetary Fund |
| INS | Indian Naval Ship |
| INTERFET | International Force East Timor |
| ISR | Intelligence, Surveillance and Reconnaissance |
| IT | Information Technology |
| JCSS | Joint Command Support System |
| JDAM | Joint Direct Attack Munition |
| JFACC | Joint Force Air Component Commander |
| JP | Joint Project |
| JSOW | Joint Stand-off Weapon |
| JSTARS | Joint Surveillance Target Attack Radar System |
| JTF | Joint Task Force |
| JWID | Joint Worldwide Interoperability Demonstration |
| KDP | Kurdistan Democratic Party |
| KLA | Kosovo Liberation Army |
| LCC | Land Component Commander |
| LEO | Low Earth Orbit |
| LRDG | Long-Range Desert Group |
| MACV | Military Assistance Command Vietnam |
| MASINT | Measurement and Signature Intelligence |
| METOC | Meteorological and Oceanographic (service) |

| | |
|---|---|
| MLRS | Multiple Launch Rocket System |
| MOST | Mobile Off-Shore Terminals |
| MP | Member of Parliament |
| NAFTA | North American Free Trade Agreement |
| NASA | National Aeronautics and Space Administration |
| NATO | North Atlantic Treaty Organisation |
| NAVWAR | Navigation Warfare |
| NCC | Naval Component Commander |
| NFZ | No Fly Zone |
| NII | National Information Infrastructure |
| NOAA | National Oceanographic and Atmospheric Administration [US] |
| NORCOM | Northern Command [Australia] |
| OECD | Organisation for Economic Cooperation and Development |
| ONW | Operation NORTHERN WATCH |
| OSCE | Organization for Security and Co-operation in Europe |
| OSW | Operation SOUTHERN WATCH |
| PGM | Precision Guided Munitions |
| PKK | Kurdistan Workers' Party |
| PPS | Precise Positioning System |
| PSYOPS | Psychological Operations |
| RAAF | Royal Australian Air Force |
| RAAFQ | RAAF Quality |
| RAF | Royal Air Force |
| RAN | Royal Australian Navy |
| RF | Radio Frequency |
| RMA | Revolution in Military Affairs |
| RNZAF | Royal New Zealand Air Force |
| ROE | Rules of Engagement |
| SAM | Surface-to-Air Missile |
| SAR | Synthetic Aperture Radar |
| SAS | Special Air Services |
| SATCOM | Satellite Communications |
| SBS | Special Boat Services |
| SEAD | Suppression of Enemy Air Defences |
| SEATO | South-East Asia Treaty Organisation |
| SIGINT | Signals Intelligence |
| SOE | Special Operations Executive |
| SOF | Special Operations Forces |
| TBM | Tactical Ballistic Missile |
| TECHINT | Technical Intelligence |
| TELS | Transporter Erector Launchers |
| TES | Transportable Earth Stations |
| TQM | Total Quality Management |
| TTR | Target Tracking Radar |
| UAV | Uninhabited (or Unmanned) Aerial Vehicle |
| UHF | Ultra High Frequency |
| UN | United Nations |
| UNSCR | United Nations Security Council Resolution |
| UNTAET | United Nations Transitional Administration East Timor |

| | |
|---|---|
| US | United States |
| USAF | United States Air Force |
| USAFE | United States Air Forces in Europe |
| USN | United States Navy |
| VAP | Vital Asset Protection |
| VCDF | Vice Chief of the Defence Force |
| VHF | Very High Frequency |
| VTC | Video Teleconference |
| WEF | World Economic Forum |
| WMD | Weapons of Mass Destruction |
| WTO | World Trade Organisation |

# OPENING ADDRESS

## AIR MARSHAL ERROL MCCORMACK

Minister, CDF, Secretary, visiting chiefs of staff, distinguished guests, ladies and gentlemen.

It is indeed a pleasure to welcome you to the 2000 Air Power Conference on 'Air Power and Joint Forces'. I am delighted that so many people decided it would be worthwhile to attend. I am told we have over one thousand registered delegates.

It's good to see representatives from military Services other than air forces, as well as many civilians and large numbers of retired people, and it's especially pleasing to have many regional Air Force Chiefs or their representatives here. To them, and to everyone else, let me extend a warm RAAF welcome.

I also extend a special welcome to our speakers, whose contributions are essential to the success of the conference. Some have travelled long distances to be here, and have made room for us in busy schedules. I am grateful for their support.

'Air Power and Joint Forces' is the sixth in the RAAF's biennial series of conferences, which, I believe it is fair to say, has earned a respected international reputation.

Let me briefly set the scene for this conference by noting that in a report on ADF command arrangements prepared in 1987, the then Colonel John Baker – later a General and Chief of the Defence Force – wrote that it has been 'air alone' which has given rise to the 'inexorable trend towards joint operations'. The topic of joint operations would therefore seem to have particular relevance for air forces.

These days, no informed commentator would question the merit of joint action. It is the only way to mount an operation or to go to war. But in practice 'jointery' raises many complex challenges: command, organisation, cooperation, planning, force balance, threat prosecution, and so on.

I hope that over the next two days those and other vital aspects of the military art and science will be discussed, analysed and, most importantly, vigorously challenged. I urge all of you to make the most of this wonderful opportunity and to join in the debate.

To deliver the Keynote Address we are privileged to have the Minister for Defence, the Honourable John Moore, MP. Several minutes ago I mentioned busy schedules. Tomorrow is Budget Day in the Australian Federal Parliament, and on behalf of the RAAF I am most grateful to the Minister for making the time to come here this morning during what is a hectic period even by politicians' standards.

Mr Moore has had a most distinguished business and political career. He was elected to the House of Representatives for the Brisbane metropolitan seat of Ryan in 1975, and

has previously held the portfolios of Business and Consumer Affairs; and Industry, Science and Tourism. He was appointed Minister for Defence in October 1998.

Ladies and gentlemen, please welcome the Minister for Defence to deliver the Keynote Address for the RAAF's 2000 Air Power Conference, 'Air Power and Joint Forces'.

# KEYNOTE ADDRESS

## THE HON JOHN MOORE, MP

## INTRODUCTION

Air Marshal McCormack, distinguished guests, ladies and gentlemen. It gives me great pleasure to be with you today for the opening of the Air Force's sixth Air Power Conference.

I would especially like to welcome all our distinguished guests, many of who are regional Air Force Chiefs and senior general officers. Your most welcome attendance is further evidence of the critical importance of the Air Force's Air Power Conferences in enhancing understanding of one another and of the future of air power.

### East Timor

It is fitting before I begin that I take this opportunity to publicly acknowledge the excellent efforts of all those in the Air Force for their outstanding contribution to the East Timor deployment. The efforts of the women and men – both support and operational personnel – played a fundamental role in ensuring peace and stability in East Timor.

The professionalism, dedication and enthusiasm demonstrated in Operation WARDEN will be crucial in the coming months and years in overcoming the less dramatic but nevertheless equally problematic issues concerning the future of the force.

## CHANGING STRATEGIC ENVIRONMENT

It is the East Timor deployment that best underlies the fact that we face a rapidly changing and unpredictable strategic environment. Go back one year – who would have predicted then that East Timor would be in transition to full independence, and that we would have led a major international peacekeeping coalition?

The pace and unpredictability of strategic change in our region, both the inner arc and further afield, is increasing. Our capability to influence the broader changes is limited, but the challenge we currently face is to ensure the ADF is flexible enough to give the Government the options it needs to be able to make the appropriate responses.

### Funding and Planning

In the midst of this changing strategic environment, the Air Force and the Australian Defence Force face very considerable challenges in the coming years. Pressures on

defence funding and looming block obsolescence present us with a unique dilemma. In essence, capability, operational and personnel demands on the budget have steadily increased, while the budget has been maintained at current levels of funding.

This means that we will have to make some difficult decisions about prioritising our future military capabilities. This means making choices.

**Choices to be Made**

We are all aware of the range of complex military capability decisions that need to be taken over the next few years – what some commentators call the coming 'train wreck' in capability procurement. Our policy processes need to make it possible for us to make the right choices in a financially responsible way, and that's easier said than done. The difficult part to this challenge is that we will need to choose between different capabilities.

As an organisation we have found it difficult to make those priority-setting choices and decisions in the past, because our instinct has been to want to have all the capabilities we can get across a wide range of contingencies.

There are no easy solutions to these problems. Indeed they require a fundamental rethink in a number of financial, management and planning areas. Given finite resources, intelligent and focused investment will be the key to future success.

I am pleased to see that the Air Force has been leading the development of innovative financial, management and planning strategies. For example, the Air 6000 Project has generally freed itself from a 'platform replacement' mindset and is investigating a range of capabilities and strategies as it seeks new ways of approaching old problems. I look forward with anticipation to the successful completion of this very important work, and to its application to the other important investment decisions we face.

Given tight financial constraints, those responsible for Air Force policy and plans have a very difficult path to tread in coming years. It is inevitable that some very difficult decisions indeed will have to be made about force structure, personnel, and operational issues.

But in making these difficult choices and decisions we must be careful that we do not, in fact, make false choices between some missions and capabilities. In this respect, the public discussion process that will precede the development of the Defence White Paper will be critical.

**Conventional War vs Operations Other Than War**

If you believe some of the media reporting surrounding the East Timor deployment then you would believe that we no longer need to train for high technology conventional military operations and should, in fact, focus our capabilities on peacekeeping and land forces. Flowing from that is the belief that sea and aerospace forces would largely have just a supporting role to play. However, one of the insights emerging from what the ADF has done over the past few years is that operations other

than war, such as Bougainville and East Timor, do not just mean army boots on the ground.

Aerospace power brings to bear rapid mobility, reach and responsiveness that can prevent unstable situations from getting out of control. And just because operations such as East Timor are not – from our perspective – wars, it doesn't mean that they are risk free. The rapid proliferation of man-portable surface-to-air missiles means that air assets remain vulnerable during take-off and landing. Electronic self-protection remains vital. Similarly, a transport aircraft on the ground is a large, cumbersome and inviting target, and the same applies to helicopters. When out of their natural element, they need protection from attack.

Finally, the use of aerospace power in operations other than war give us the ability to operate flexibly in difficult circumstances. It also shows those who may threaten escalation that the helping hand that we offer can turn to a fist – with little warning and with devastating effect.

Who could not have been impressed, as I was personally, to watch the role of the RAAF as the deployment took place out of Darwin, Tindal and Townsville. The role you played was absolutely critical to the success of that particular day and, no doubt, right through the operation.

## THE JOINT APPROACH

All of this underpins the importance of taking a joint approach in making the choices and decisions we face. We do this not just because of budgetary pressures but because it is a smarter way of doing business. We simply cannot afford to have built-in redundancies to avoid reliance or dependency on another Service.

This will be critical as we attempt to strike the right balance between seemingly complementary military capabilities within a framework of looming investment decisions.

It is now less important what colour uniform the operator is wearing, so long as the right effect is produced where and when it is required.

### Joint Operations

In thinking about joint operations, I tried to recall the last time the Australian Defence Force mounted a single Service operation. The first example that comes to mind dates back to a few minor ground operations during the Vietnam War. The more I thought about it, the more it was apparent that joint operations have been fundamental to the way the ADF does its business. Specific operations may not have been classed as 'joint', yet there has always been demand for the Navy, Army, and Air Force to work together to produce the desired outcome.

This is as true of Australian involvement in conflicts as far back as World War I, as it is of recent deployments to Somalia, Cambodia, Bougainville, and East Timor. In the

future, the importance of a fully coordinated and structured approach to joint operations will only increase.

Therefore, in the context of this conference, it is important that Air Force capabilities, policy and plans are honed in order to maximise fully the potential of joint operations. In the future, each Service arm will become even more dependent on the others.

Recent deployments have demonstrated the unique Australian way of 'joint operations'. Indeed, the Defence Force responded with alacrity when it was tasked for the first time last year with forming, coordinating and leading a coalition operation. That the Defence Force was so successful in that complex undertaking to prepare extensive arrangements in such a short period of time, suggests that to date ADF joint planning and training has been on the mark.

But as this conference's ambitious agenda suggests, there is a whole range of important considerations that need to be constantly re-visited in order that ADF joint operations are successful.

General Deptula will be sharing his unique insights and experiences of planning and conducting the 1991 Gulf War campaign. It will be interesting to compare that experience with recent ADF activities.

Dr Hallion will examine the implications for air power and joint operations with respect to the emergence of asymmetric threats, such as information warfare and terrorism.

These two areas as well as the discussion of the militarisation of space, globalisation, and the insights of the Commander Australian Theatre will be vital to understanding the key challenges and opportunities of the future.

**Joint Logistics and Support**

Another of these challenges lies in the provision of joint logistics and support. I have made no secret of my desire to see a far more integrated approach to logistical support.

It is clear that the formation of Support Command Australia was a positive and necessary step to coordinate materiel support to whatever capability Defence is expected by Government to deliver. But an integrated approach does not solely mean a joint approach from the three Services.

Decisions determining up to 80 per cent of whole-of-life costs including materiel logistic costs, are made during the conception and acquisition stages of the materiel life cycle. For that reason we are currently investigating ways in bringing Acquisition and Support together into the one organisation.

To that end we also need to ensure seamless cooperation between HQAST and whatever organisation results from the current review of Support Command. Drawing heavily on advice from Support Command, HQAST has already developed policy and a suite of international arrangements for mutual logistics support for operations and exercises. This was used to great effect in East Timor.

With rapid changes in technology, the way in which the ADF buys, manages and delivers its capability will change.

No matter if the Government is pursuing a conventional combat role or peacekeeping, we are highly likely to be buying a 'total service', which combines elements of the three Services, Defence and the private sector.

## CONCLUSION

In conclusion, while the gravity of the problems before the Department of Defence should not be underestimated, the Air Force has a very important role to play in the future security of Australia.

Increasing costs are a particular characteristic of aerospace components, albeit with vastly improved capabilities. The promise of lower cost capabilities, perhaps using unmanned air vehicles and networking of sensor and shooter systems could take some time to be fully realised.

In the interim, the Defence Force will be faced with the requirement to invest in high cost aerospace components if it is to maintain an adequate defence capability. Competing funding pressures across society will likely limit the scale of investment available given the existing and projected regional security environment. Some measure of funding increase will be necessary if we are to maintain our current capabilities and readiness.

In the Australian Defence Force's drive for security, it will need to maintain a selective and affordable level of interoperability with our allies, but we may also need to maintain a more selective and affordable level of capability generally than we have in the past.

We will have to make considered judgements and take some calculated risks – the balance between current and future force capabilities is but one complex issue facing us. We must acquire those elements of high technology defence systems that we can afford and then adapt them to suit our unique needs in innovative and flexible ways. In other words, Air Force, like the other Services, must strive to be more **intelligent** in their approach to achieving security and **realistic** in acknowledging the resource limitations we face.

As history has shown, while sea, land and aerospace forces have their respective strengths, neither can guarantee Australian security alone. True military power comes from an amalgamation of the capabilities of sea, land and aerospace power.

Over the last fifteen years or so, the ADF has matured considerably as a joint fighting force, but there is still a fair road to travel.

I recognise the value of conferences such as this to promote discussion and the more intelligent application of limited resources for air power, particularly within a joint context. Therefore, it gives me great pleasure to declare the sixth Air Power Conference open.

# GLOBALISATION: THE BIG PICTURE

DR GERARD HENDERSON

## INTRODUCTION

As I understand it, Dr Alan Stephens invited me to address this conference on 'Air Power and Joint Forces' following a column which I wrote for *The Sydney Morning Herald* and *The Age* in June 1999. There, I expressed the view that NATO's air power could – and would – prevail in the campaign to drive Slobodan Milosevic's Serbian forces out of Kosovo. At the time it was fashionable to run the line that, in the final analysis, only ground forces could achieve military objectives. This view was expressed by many overseas and in Australia – including La Trobe University academic Robert Manne, who wrote that the 'folly' of NATO's faith 'in the capacity of air power to solve the Kosovo dispute has been tragically revealed'.[1] I do not claim to be a military or strategic expert, but it seemed to me that this was a dated view. And, as it turned out, Robert Manne's prophecy was soon discredited.

The leadership in Belgrade presides over an authoritarian state. Even so, these days there are limits as to what authoritarian rulers – with an educated and informed citizenry – can get away with. And ongoing, virtually uncontested, air strikes cannot be endured day after day in most developed societies. Especially when the attacks concentrate on what are, in effect, the necessities of life – electricity, transport corridors and petrol. Moreover, in an increasingly globalised world, those under the bombs have a reasonably accurate idea of the circumstances that have led to the air attack and what will bring about the end of hostilities.

## GLOBALISATION AND AIR POWER

In a sense, the development of air power provides a convenient snap shot of warfare in the 20th century.

- In 1914-1918, air power was scarcely developed. Two modern armies – modern by the standards of the day – slugged it out in one relatively small area, on the Western Front. Australia suffered close to 60,000 dead in World War I – in a population of around five million. In the Vietnam War, the United States suffered close to 60,000 dead – in a population of around 250 million. Unlike Vietnam, World War I was not a conflict covered by the mass media. It is almost impossible to envisage similar losses today – however just a particular cause. Democratic electorates would not tolerate such carnage. Not so much because the young would rebel; more likely parents (of smaller families today than eight

1 *The Sydney Morning Herald* and *The Age*, 19 April 1999.

decades ago) would not accept the death of, and injury to, so many young men and women.

- In 1939-1945, air power did not resolve the issue in the European theatre although it almost certainly shortened the conflict. Hostilities were brought to an end when the post-1941 wartime partners – the Soviet Union from the east and the Allies from the west – defeated the Germany Army on the ground. But air power circa 1939-1945 changed the nature of warfare forever – in that bombers made the concept of total war a reality for entire populations. The evidence of the air war of half a century ago is still evident today in the cities of Germany and Austria and, to a lesser extent, in Britain. In the 1940s, nation states were still in the ascendancy and citizens still had a limited understanding of international developments – even though media coverage of conflict had increased since World War I. Again, it is almost inconceivable that such losses as incurred in the Second World War would be tolerated in any developed democratic society today.

- During the Vietnam War, many an opponent of the Allied commitment claimed that the United States was bombing Vietnam back to the 'Stone Age'. But that was not the case – which is why contemporary Hanoi survives today as an historic old city. By the mid-1960s and early 1970s, opposition to the carpet bombing of cities – Coventry in 1940 and Dresden in 1945 – was so great that the democratically elected leaders in Washington DC felt constrained about the use of air power. This had the unintended consequence of placing unnecessary risk on pilots who, in effect, were flying flight-paths which had been approved by political leaders in Washington DC In *Going Downtown*,[2] Jack Broughton described air operations against North Vietnam as 'a war of fatal oversupervision' – and referred to 'the maze of restrictions imposed upon those of us assigned the task of attack in a nearly impossible situation'. John McCain made a similar point in his successful memoir *Faith of my Fathers*.[3] He referred to the political constraints placed on targets faced by aircrew who had to confront 'the most formidable air defences in the history of modern warfare'.

- By the Gulf War of almost a decade ago, improved targeting had made the deployment of air power politically acceptable once again. Even so, Saddam Hussein's troops were driven from Kuwait back to Iraq only after a ground attack.

- NATO's war against President Milosevic was the first occasion in which military objectives (albeit limited ones) were achieved by air power alone. With, for the most part, NATO aircraft flying at high altitudes in order to minimise NATO casualties. As we know, President Clinton was determined to avoid any fatalities – which provides an indication of how political considerations affecting conflict have changed in a century.

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2 Jack Broughton, *Going Downtown: The War Against Hanoi and Washington*, Orion Books, New York, 1988.

3 John McCain, *Faith of My Fathers*, Random House, New York, 1999.

In 1900 air power was an unknown – and unanticipated – phenomenon. Half a century later it was the principal means by which warfare extended beyond battlefields. By 1999, democratically elected politicians – Bill Clinton in the United States and Tony Blair in Britain – saw air power as the only politically acceptable means of achieving military ends. Nothing else could deliver the much sought after double – namely victory with few, if any, casualties. But, as we know, it was air power capable of considerable accuracy – with an estimated 90 per cent of bombs hitting designated targets.

What has all this got to do with globalisation? Quite a bit, actually. It demonstrates how the information revolution – one aspect of globalisation – has changed both politics and war, forever.

This is not the first age of globalisation. There was another – from the Industrial Revolution of the mid-19th century until around the turn of the 20th century. Like Globalisation Mark II, Globalisation Mark I had it winners and losers. In the event it met resistance at around the time when democratic forms had developed in the West. It took until 1970 for world trade to again reach the level it had attained in 1914. For almost half a century – from the early 1900s to the late 1940s – nations tended to be inward looking. In a sense, this inwardness made it possible for democracies to accept the truly appalling casualties of 1914-1918 and 1939-1945. As discussed, it seems impossible that such losses would be accepted today in globalised, economically independent democratic societies – however just the cause. This became evident a quarter of a century ago in Indochina – a war which fell halfway between today and World War II.

For the foreseeable future, it is unlikely that any Western style democracy will enter into a military commitment – of whatever kind – without the support of others. President George Bush worked hard to build up an alliance for DESERT STORM. Tony Blair and Bill Clinton did likewise to encourage support for actions in Kosovo and Serbia. And, more recently, John Howard was anxious to get as many nations as possible to contribute to the INTERFET force in East Timor under Australia's leadership. It is a fact of contemporary political life that elected leaders are reluctant to commit forces unless as part of some greater force. Whether it be the United Nations or NATO, or whatever. Alliances make military commitments more politically acceptable. And, as we know, electorates matter. Interdependence is part of globalisation. This is relevant to Australia.

## AUSTRALIA IN 2000

Australia is a large nation geographically, with a middle-sized economy – the thirteenth largest in the world. But at 19 million (23 million if you add New Zealand to make up Australasia) Australia is relatively small. Particularly if you consider the standing of similarly sized nations. Ireland's population is 3.5 million (five million if Northern Ireland is included to make up the island of Ireland). The Netherlands is around Australia's size – at 17 million. But both Ireland and the Netherlands are part of the 300 million strong, and growing, European Union (EU). And the Netherlands is also part of NATO. Canada has a population of 27 million. But Canada is part of 300

million strong North America and actively involved with NAFTA (North American Free Trade Agreement), which now includes Mexico and seems destined to move further south. Canada is also part of NATO.

Unlike Ireland, the Netherlands and Canada, Australia has no obvious similar 'fit'. APEC (the Asia-Pacific Economic Cooperation forum) is important – but it will never have a similar role to the EU or NAFTA. Moreover, Australia is not to be part of the developing Asian grouping – the ASEAN countries plus three key nations of North-East Asia – Japan, China and South Korea. The Australian Government does not seem to have taken serious diplomatic initiatives aimed at having Australia included in this new group. Even if it did, entry would be difficult. Clearly Australia has no natural 'fit' within the region. This in spite of the fact that Australia's cultural links with Asia are greater than ever – due to the ever increasing number of Australians of Asian background and to continuing high levels of trade with the Asia-Pacific. In the age of Globalisation Mark II, it makes a great deal of sense for Australia to be fully involved in the world – both regionally and internationally.

## AUSTRALIA IN 1900

At the turn of the 20th century, Australia followed a world trend in rejecting the consequences of Globalisation Mark I. Australia consciously turned inward – along with many other nations. In my book *Australian Answers*[4] I referred to this as the 'Federation Trifecta'. Meaning that there was broad bipartisan support for a policy of centralised industrial relations, protection all round and White Australia. In *The End of Certainty*,[5] Paul Kelly added two components – namely state paternalism and imperial benevolence – and called this the 'Australian Settlement'. In fact, at the turn of the 20th century, there was no clear consensus as to what was the proper role of the state – apart from intervening in trade and wages areas. In other words, there was no agreement about state paternalism. And it was not until the 1980s that foreign policy ceased to be an issue of significant contention in Australian politics. The division over conscription during World War I indicated that there was no real agreement about the meaning and consequences of 'imperial benevolence' in the early decades of the Australian Commonwealth. However, as a general rule, Australia's inwardness in the early decades of the 20th century did not extend to security issues. Hence Australia's involvement in 1914 and 1939 (ie before the Pacific War).

Australia found out, through experience, that inwardness on economic and social issues did not work – well before the onset of Globalisation Mark II. It became evident that the Federation Trifecta was incompatible with the aspirations of an immigrant, trading nation situated in the Asia-Pacific. The White Australia Policy, for obvious reasons, prevented Australia from playing an effective role in the Asia-Pacific. It was junked by Coalition Prime Minister Harold Holt in 1966 and removed from legislation by Labor Prime Minister Gough Whitlam in the early 1970s. However, it was not until Malcolm Fraser's prime ministership, in the second half of the 1970s, that a significant

4 Gerard Henderson, *Australian Answers*, Random House Australia, Sydney, 1990.

5 Paul Kelly, *The End of Certainty: The Story of the 1980s*, Allen & Unwin, St Leonards NSW, 1992.

number of Asians (many of whom were Indochinese refugees) came to settle permanently in Australia. During Bob Hawke's prime ministership in the late 1980s protection levels were substantially reduced and the protection ethos was spiked for good. Paul Keating's Labor Government commenced freeing up Australia's centralised industrial relations system in the early 1990s; the pace of reform was hastened after John Howard won the March 1996 Federal election.

As indicated, Australia's decision in turning its back on globalisation around the turn of the 20th century was not unique. What is the explanation for this rejection which became a worldwide phenomenon among the developed nations?

## THE FALL OF GLOBALISATION MARK I

In his address to the 2000 World Economic Forum at Davos, President Clinton said that:

> ...in many ways the global economy was almost as integrated one hundred years ago as it is today. But after World War I, leaders in the United States and Europe made what all now recognise were false and shortsighted choices. Instead of partnership, they chose protectionism and isolationism. And for decades, globalisation went in reverse – with utterly disastrous consequences.

However there is evidence to suggest that Globalisation Mark II was in retreat **before** the guns commenced firing on the Western Front in August 1914. In their book *Globalization and History*,[6] authors Kevin H. O'Rourke and Jeffrey G. Williamson reached a different conclusion from President Clinton about the breakdown of global capital markets and the end of mass migration which were a feature of the early years of the 20th century:

> It would be comforting to think that interwar deglobalisation was an exogenous shock, brought about by the onset of the Great War, events that had nothing at all to do with the globalisation forces that had been at work previously. Were this true, we could reason that interwar autarkic reactions could be avoided today, so long as the international community keeps the peace. The evidence ... suggests that this view of interwar deglobalisation is both incorrect and misleading. The correct view is that a political backlash developed in response to the actual or perceived distributional effects of globalisation. The backlash led to the reimposition of tariffs and the adoption of immigration restrictions, even before the Great War. Far from being destroyed by unforeseen and exogenous political events, globalisation, at least in part, destroyed itself. ... The record suggests that unless politicians worry about who gains and who loses, they may be forced by the

6 Kevin H. O'Rourke and Jeffrey G. Williamson, *Globalization and History,* MIT Press, Cambridge, Massachusetts, 1999.

> electorate to stop efforts to strengthen global economy links, and perhaps even to dismantle them.[7]

Australia became inward on economic issues as a result of a political consensus reached around the time of Federation – some time before the onset of World War I. The result was not suitable to a raw material producing, trading and immigrant society. Yet, in a sense, the people had spoken. And there was little the leadership could do – even if it had the will.

## A (POSSIBLE) FATE OF GLOBALISATION MARK II

There is nothing inevitable about globalisation. Some democratic nations are more globalised than others – compare the United States and France. Some developing nations have attempted to resist the changes which are a consequence of globalisation (eg Vietnam). Other areas such as North Korea and Cuba have chosen to reject the world, so far at least. The debate about globalisation is probably not as deep-seated in the OECD nations now as it was during, and immediately after, the recession of circa 1990. Opposition to globalisation was stronger in the 1992 US Presidential election than it is today – although the possible involvement of Ralph Nader in the lead-up to the November 2000 election may change this. This is also true of Australia. Pauline Hanson's One Nation Party stood against many of the manifestations of globalisation – free trade, immigration, economic change. Clearly, One Nation has less impact today than it did three years ago. Economic growth, driven by the US economy has mellowed some of the domestic opposition to the globalisation process. But the debate about globalisation has not gone away. Witness the demonstrations at the World Trade Organisation (WTO) meeting in Seattle in late 1999, at the Davos World Economic Forum (WEF) in early 2000 and at the Washington DC meeting of the International Monetary Fund (IMF) in mid-2000. Little wonder that concern has been expressed that demonstrations might ignite in Melbourne in late 2000 when there will be a WEF meeting in the antipodes.

The demonstrations at the WTO, WEF and IMF gatherings saw an unusual combination of anti-development Greens and sections of the trade union movement. These protestors have little in common – apart from opposition to globalisation. However, their combined stance means that Globalisation Mark II is no sure thing. The opponents of Globalisation Mark II are making a politically attractive case out of the disparity between wealthy and poor nations (especially with respect to Africa where HIV/AIDS has reached catastrophic proportions). Also there is a growing disparity between rich and poor in virtually all globalised Western economies. But rich and poor alike have votes – and there are many more of the latter than the former. The less well off may oppose the effects of globalisation unless there is a prevailing view that the benefits of globalisation are available to most, if not all.

In *The Lexus and the Olive Tree*,[8] Tom Friedman argues that he didn't start globalisation and he 'can't stop it'. His book is devoted to an argument about how to

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7 O'Rourke and Williamson, *Globalization and History*.

8 Thomas L. Friedman, *The Lexus and the Olive Tree*, HarperCollins, London, 1999.

'get the best out of this new system – and cushion the worst for most people'. Clearly, Tom Friedman understands that Globalisation II needs to produce results. Lest, like Globalisation I, it is rejected due to insufficient political support. Already there are signs that globalisation is under strain. Take Europe for example. In Britain, the Conservatives remain very sceptical of the European Union and Labour remains unwilling, at this stage, to commit to a single currency. Meanwhile in Germany, Angela Merkel (the newly elected leader of the Christian Democrats) has raised some concerns about the concept of a federated Europe. France remains ambivalent about freeing up trade. Malaysia has implemented credit controls. And Vietnam is a reluctant participant in the international economy. These are but a few examples. Certainly change is not all one way. Ken (formerly 'Red Ken') Livingstone has conceded that he was wrong two decades ago to believe in a centrally planned economy. The Mayor of London was recently reported as saying: 'As a system of distribution and exchange of goods, I do not think it is actually possible to beat the market'. He added that, as Mayor of London, 'there is no question of a chief executive saying – shall we move to Paris or New York or Berlin'. Clearly, Ken Livingstone (unlike the unlamented 'Red Ken' Livingstone) understands the implications of globalised markets.

Yet others have yet to be mugged by reality. In the United States, Patrick Buchanan has turned opposition to globalisation into a political career. Patrick Buchanan opposes free trade and immigration. Similar attitudes can be found in Western Europe, North America and, to some extent, Australia. Ralph Nader opposes globalisation from a leftist position, an anti-business ideology. Patrick Buchanan, on the other hand, rejects the manifestations of globalisation (free trade and immigration) as inconsistent with his extreme right wing ideology. As the *New Republic* recently demonstrated, in the US opponents of globalisation (whether of the left or right) receive substantial funding from the one source.

Francis Fukuyama has argued that the left should love globalisation:

> Globalisation will not be reversed, because it is driven by advances in information technology that cannot be undone. Countries that try to opt out of it are punished by being left behind; it is no coincidence that those nations most opposed to international labour and environmental standards are poor ones. On the other hand, globalisation produces huge stresses as societies race to keep up with economic change, and it is reasonable to think that there should be links between trade liberalisation and rules about how governments expect their citizens to be treated.[9]

The problem is that logic and politics are not the same. Globalisation Mark I did not prevail. Globalisation Mark II might be thwarted – in spite of the fact that the fastest globalising nations have growth rates far higher than nations which are integrating more slowly with the world economy. The problem is the growing gap between rich and poor which will have to be addressed if Globalisation Mark II is to prevail. And despite interdependence, there remains support for the nation state. This is evident worldwide. Among the democracies, support for the nation state is probably strongest in such nations as France and Canada.

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9 *Asian Wall Street Journal*, 2 December 1999.

## AUSTRALIA AND GLOBALISATION

It is in Australia's interests that Globalisation Mark II succeeds. A nation of 19 million without any obvious 'fits' can only benefit from the interdependence which comes from globalisation. Prime Minister John Howard said as much when addressing the Commonwealth Heads of Government Meeting (CHOGM) in Durban in November 1999. This is even more so in the case of New Zealand which, in a security sense, seems to be choosing greater isolation. Australia can only benefit from interdependence – including links with traditional allies, operations in peacekeeping forces and developing economic contacts. All this is in line with the analysis in the 1997 White Paper *In the National Interest.*

We are living in times that have been changed forever by new technology – and its consequences. Nobody and no nation can successfully wind back the information age. But governments – sometimes at the direction of electorates – can slow down or abandon many aspects of globalisation. Meaning, in particular, trade flows, migration movements and developments which lead to interdependence. In order to support globalisation, Australia can think and act globally as much as possible with reference to trade, migration and security, and ensure that the globalisation process has support in Australia. This will require that attention is given to resolving, in so far as this is possible, the growing divisions between rich and poor. One of the by-products of globalisation is that individuals have become obsessed with money and, to a lesser extent, fame. In democratic societies taxpayers have invariably wanted both increased government services and reduced taxation. However, at a time of little ideological debate, and after the Cold War, this phenomenon seems to have become more deeply entrenched than ever before.

Provided Australia can handle the distributional effects of Globalisation Mark II – and this will not be easy – Australia has a vested interest in the process. But Australia will have to project itself in the only region where we can hope to exert a significant influence in view of our position as a middle power.

This will require a greater involvement in the Asia-Pacific. Alexander Downer has done a fine job as Foreign Minister in recent years. However, his recent statement in April 2000 at the Asian Leaders Forum in Beijing about the division between **practical** regionalism and **cultural** regionalism was unfortunate. Mr Downer was running the line that Australia can experience practical, but not cultural, regionalism in the Asian region. But Australia is not culturally distinct from Asia. Since the end of the White Australia Policy, many Australians have common ties of history, and identity, with nations of the Asia-Pacific.

This is a message which could be given by John Howard, if only the Prime Minister would travel more in the region. So far Mr Howard has not made bilateral visits to South Korea or India and he was unable to attend the 1998 and 1999 meetings of the South Pacific Forum. There are some indications that the Prime Minister's office may be re-assessing his (so far limited) travel – especially in the Asian region. If so, it would be a good idea to go to Indonesia (provided this is compatible with the wishes of the Jakarta authorities). Indonesia is of crucial importance to Australia. In the wake of East Timor, it would make sense for John Howard to break the current diplomatic

deadlock by announcing that he is willing to meet President Wahid in Indonesia. There is no political downside in John Howard making such a gesture. After all, Opposition leader Kim Beazley has met the Indonesian President post-INTERFET.

Australia needs to take initiatives in region. This was done by Keating and Hawke Governments and also by Fraser and Menzies. Unfortunately the Howard Government came to office with the pledge to reduce Australia's involvement in the region. But it is unlikely that the Australian electorate would care if this pledge – made to score points off Paul Keating in the mid-1990s – was now junked.

At a time of considerable budget difficulties, the ADF needs to think of itself as an integrated entity. Outside a situation of imminent war, governments (Coalition or Labor) are only likely to commit significant resources to the ADF if such a move has – or can attain – significant public, or taxpayer, support. In this sense, defence is a product – like any other competing product such as health or education – except that there can be no alternative private scheme. Australians need to be satisfied not only that we need a defence force but also that we need an army, a navy and an air force. ADF personnel must play their part in getting the message across.

The obvious fact is that no-one can prophesise the future. Just under a decade ago, few predicted that one member of the United Nations (Iraq) would invade another (Kuwait) and would be driven out by an international force. Just over a year ago, few predicted war as the result of a nation state (Serbia/Yugoslavia) acting in a way at odds with standards expected of a government with respect to an ethnic minority. Just over six months ago few predicted that Australia would commit some 8,000 personnel to a peacekeeping force in East Timor. But it happened.

There is good reason to expect peace in the Asia-Pacific region. Yet it is timely to remember that the Asia-Pacific contains some areas of potential instability, especially in the Taiwan Strait and on the Korean Peninsula.

It's a fair bet that Globalisation Mark II will continue apace with gradually reducing trade barriers and ongoing migration issues. But all this is much dependent on the world economy – which, of course, is unpredictable. It makes sense to be involved in Globalisation Mark II but to be prepared that, as with Globalisation Mark I, the process might scale down or stop. Whatever the outcome, Australia has little option but to engage with the world – particularly the Asia-Pacific – as much as possible. The same can be said for New Zealand. The evident decline in New Zealand's defence – and security links – is a matter of genuine concern for Australians and New Zealanders.

Australians should expect that their Government – of whatever political cloth – will project Australia in the region. This can best be done by economic engagement, cultural links, diplomacy and an Australian Defence Force capable of adequately promoting Australia's security and interests. This includes cooperating with friendly nations in the region while maintaining links with Australia's traditional allies. To this extent, globalisation is also a defence issue.

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## *DISCUSSION*

*Mr Trevor Thomas (Australian Defence Business Review):* I was very interested in that outline about globalisation. I was wondering whether you might consider that the opportunity for the United States to fully remove tariffs and quotas for imports of textiles, clothing and footwear in 2005 under the Uruguay Round gave it an opportunity to reject and move backwards on the move for wider globalisation.

*Dr Henderson:* Well that's a good question. I'm not sure that the United States has moved back yet. As you know, there is a strong debate in the United States on this issue. I think that there will always be disagreements with the United States on these matters because of the interaction between the Congress and the Administration, but I don't suspect that the move backward there is any more substantial than in parts of Europe. I saw President Clinton at Davos on pay television, and he seemed to be very committed globally. I think that's also true of Al Gore who, I suspect, will probably win the next election, and I think it is true of George Bush Jnr. So I don't see any great step back by the United States.

I am conscious that the United States has an ongoing attitude about being concerned about international involvement, but I don't think the reaction to freeing up trade is as great now in the United States as it was two Presidential elections ago, and the reason for that is that employment has dramatically increased and unemployment has significantly decreased. So with unemployment in the United States now running, I think, at under four per cent, the kind of opposition that Patrick Buchanan built up when he ran in the '92 election as someone who said that tariffs would create jobs and the abolition of tariffs would destroy jobs – and a lot of people listened to him, and Perot the same – is not as valid these days because people know the jobs are being created in spite of this. So that's why I don't think there is a big issue there at the moment. On the other hand, if you have an economic downturn, and at some stage the US economy is going to have to turn down – I don't know at what speed or to what extent but you would expect at some stage there will be some kind of down turn – at that stage, I think it is important to remember that the kind of issues which you raised are still around, and there may then be increasing pressure on government to change.

*Air Commodore John Kentish (RAAF):* Dr Henderson you didn't talk much about the United Nations. In fact, I don't think you mentioned it at all. What role do you see the United Nations playing in the globalisation in the next thirty to fifty years, and what do you think Australia's role will be in that?

*Dr Henderson:* You are right, I had some notes about it but I cut them short towards the end. I was only going to talk a bit about peacekeeping, or peacemaking. As you know, the United Nations is essentially dependent on nation states. If you look at peacekeeping and if nations aren't willing to offer troops, the United Nations in that area can't do much at all. I'm not an expert on this area but I see considerable problems, not at this stage in East Timor, but certainly in Sierra Leone today, where as I understand it, yet more UN forces have been kidnapped or taken, or whatever. I was watching an interesting program on television the other night with William Shawcross on *Lateline.* He has just done a book on peacekeeping and is going to be in Australia for Sydney Writers' Week – he is also talking to the Sydney Institute. Gareth Evans

also was on the *Lateline* program, and I think the general consensus was that unless there is a political will in nation states or in formations like the EU or NATO, or whatever, and unless there is a clear will that troops support the United Nations and a clear agreement about control and command, the United Nations won't make much impact on any of these areas.

I'm not at all convinced, as I mentioned in my paper, that the age of the nation state has disappeared. If you walk around Europe or North America, certainly in the United States, you will find considerable concern about the United Nations, and in parts of Europe considerable concern about the EU and some concern about the United Nations. So I have my doubts on this. I think the United Nations is better under Kofi Annan than it has been for some years, but it is still an organisation that's very disparate and is really not capable of delivering much on its own. I'm not as critical of the UN as I once was, but I've still got considerable doubts about how it can perform, and it certainly can't perform unless it's got backing and I can understand why nations are concerned about handing over control of their forces to other commanders. It's a big issue in the United States, particularly when, and for obvious reasons, politicians are now deeply concerned about casualties or fatalities in military or peacekeeping actions. If it was ninety years ago, it probably would raise no interest at all, but in Western societies in particular this is now a huge issue.

*Mr Alex Freeleagus:* Thank you Dr Henderson for emphasising how important globalisation is to this country. I would take issue with you on one matter, and that is on Australia's profile in many parts of the world. Australia has taken new citizens from 130 countries. It has changed its ethnic balance, with a few growing pains, extremely successfully. I would suggest that in all of those places, Australia's profile is, on a personal level, very high and this is something which progressively can be built on.

*Dr Henderson:* I understand the point and I agree with you that it can be built on, but that is for political leaders to do. For example, Malcolm Fraser was one and Bob Hawke was another, to proudly proclaim that Australia is a multicultural society, which was always the case. It was the case in 1788. If you look at who came on the first ships of European settlement, they weren't all British: there was one black on one of them, there were Jews, there were Irish, there were others. We were always a multicultural society, but if the political leadership is willing to say that, then people get the message. If the political leadership doesn't want to say it, then people won't get the message.

Certainly, individuals will know that they have relatives living here. Italians have relatives living in Australia, they have relatives living in South America. The Irish, as you know, went to North America and to Australia and New Zealand or wherever. But unless, in a sense, we declare proudly that we are a multicultural immigrant nation, I don't think that opinion leaders in other nations are going to get that idea. We really have to sell ourselves because we are so small in a numerical sense. I think the concept of a multicultural Australia was probably one aspect of why we got the Olympic Games but this, for some reason, is regarded by the political leadership of the current Government as something that you shouldn't talk about too much. Now I don't think that is true of all members of the Government but I think it's true that the Prime Minister doesn't like the term, so he doesn't talk about it. This is the problem that we have.

Take Davos, for example. You can criticise Davos as being a lot of wealthy people and many not so wealthy journalists gathered together in Switzerland in the cold and rather inadequate accommodation once a year, and feeling terribly self-important about themselves, but on the other hand it is an important gathering. I watched a fair bit of it this year on pay television, where they covered most of the major political speeches. Now in successive years – I forget which years – Alexander Downer has been there and performed quite well, and John Fahey has been there and he's performed quite well, and the same can be said for Richard Alston, but at least two years in a row the Prime Minister has rejected an invitation.

Now Australia at the moment has got a terrific message to sell – your point – that we are a successful multicultural society. We have one of the strongest economies in the world, perhaps second to the United States, but still a very strong economy. We've got the Olympic Games, but the only person who can sell Australia's message is the Prime Minister. In the United States you can send the Vice President but in Australia or a country our size, or the Netherlands or Canada or Ireland, you can only send the Prime Minister. John Howard doesn't want to travel much, so he doesn't go, so our message really hasn't got across. So all I'm saying is that unless our political leadership is willing to sell our message and travel, particularly in the Asia-Pacific region but not only there, our message isn't going to get across.

I've travelled with John Howard overseas and he can perform extremely well if he wants to, but he cancelled at late notice an invitation to Malaysia, and there were reasons but I don't think the reasons were all that compelling. He neglected to go to India – where we had an important engagement – he hasn't been to South Korea which is, I think, our second most important trading partner. There may be good political reasons for this – I mean, he may say that Alan Jones doesn't want him to travel and Stan Zemanek[10] doesn't want him to travel and whatever else – but I think the duty of a Prime Minister is to travel and to sell the nation, and they should be supported. Now I think in days gone by there may have been a few rorts, but those days I think are gone. Our Prime Ministers should travel and sell the nation. My point is that unless we are telling the world about this, no-one is going to know because it is a lovely society in which to live but it is also true to say that nothing much happens here, and that makes it a pleasant society. I mean it is interesting just to look around the place. If you look at some of the racial crime that is occurring in fine democratic societies like the United States, and even in Britain and also in France, and you look at Australia where this is virtually unheard of, even today, you can see just what a tolerant society we are and what a pleasant place it is to live. But unless people are selling us to the world, the world is not going to notice us – we are just too small. Even if we add in the 'Kiwis', and the New Zealanders disturbingly seem to be intent on running down their defences at a more rapid rate than we are running down our defences and I don't think it's going to be good for either nation if this continues.

*Wing Commander Chris Miller (RAAF):* You had a theme about air power gaining an ascendancy, or the use of air, because of the reduction in casualties – our casualties, not their casualties – and how that was agreeable to a government. I wonder what your thoughts are about the need or desirability or use of air strike as a major factor in an Australian Defence Force of the future, whether it should be a focus and should be employed in these multinational forces.

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10 Editor's Note: Jones and Zemanek are popular Australian radio broadcasters.

*Dr Henderson:* If you start talking about air strike capacity, someone is going to raise the question: who are you going to use it against? What I am saying is – and I'm not an expert on this issue – that I think we should have an integrated Defence Force with an emphasis on joint forces. A year before no-one would have anticipated Kosovo and Serbia, and no-one would have anticipated that NATO would go to war with Milosevic. I don't think anyone would have anticipated that Australia would have peacekeeping forces in East Timor a year before it happened. The Gulf War was unpredicted. So what I'm saying is that I don't think anyone can make any predictions about what's going to happen, in which case I think it makes sense for a middle level economy like Australia to have a middle level Defence Force because we don't know where or how it may be used. As you know we had naval forces in the Gulf War, and we might have had air forces in the Gulf War – I mean there was a political opportunity for the Government to make that decision. There are also peacekeeping operations and I think it is important that a society like ours, which is small and has no obvious natural fits, has a reasonable Defence Force whilst knowing, as the Prime Minister has said, that we're never going to threaten anybody and nor would we want to. I would like to see New Zealand pulling its weight – and I don't believe it is – and I'd like to see Australia to continue to pull its weight, and I'm not sure that it will. I'm not necessarily saying that we should have forces prepared to strike here or there, I just think we should have a competent middle level Defence Force for a middle level economy, and I'm conscious of the fact that of all similar nations, as I understand it, Britain I think is probably the only one who spends what I would regard as a reasonable level of money on Defence – apart of course from the United States. As I understand it, Canada is virtually coming down to peacekeeping forces only. When I was in Europe last year I was conscious that the Europeans were building up some of their own forces as distinct from a NATO force, but I'm not sure that that's gone very far and they're not spending money either. And I know there are political constraints because what's going on in Australia is being reflected in North America, but much more so in Europe. But I think someone has to sell the message and political leaders have to sell the message that diplomacy is important, defence is important, but particularly if you are a small country in numerical strength, like Australia is.

And there is also the message that was mentioned before by the Minister, of the issue of terrorism, which is not going to go away. The one important thing you notice about terrorism is that whatever people may say, it invariably comes back and it is not going to go away and that is why societies always have to be prepared for it, and that involves a degree of military commitment as well. But again, I think, it is a matter of selling that message. In order to sell that message in Australia, you have to be interested in the world. I think John Howard is a fine politician, he is an intelligent man, he is well-educated and he knows what is going on but, unlike most of Australia's Prime Ministers since the end of the Second World War, as Prime Minister he has been primarily interested in Australian national politics. I can understand why he wants to win the next election – that's what politics are all about – but I think in a country of our size, political leaders should be, whilst interested in Australian national politics because that is their bread and butter – and you understand that – they also should have a driving interest in the world. If you are the President of the United States it probably doesn't matter, but if you are a society of our size I think it does. I'm not saying we need Defence Forces to strike at anyone, but I think we do need a decent Air Force, we need a decent Navy and we need a decent Army. How that is all worked out I don't know, except to proffer the suggestion, which I know is around, that I think it is

much better to be worked out on a general basis by the ADF, which can go to the Australian people and say this makes sense economically, it's good management and it's what we need. And I think there are leaders in the ADF who can do that, as well as political leaders who can do that.

*Dr Richard Brabin-Smith (Chief Defence Scientist):* It seems to me that one of the factors that might make it more difficult to put globalisation significantly into reverse is increasing multinational ownership of the forces of production. Now I am not an economist and I haven't seen the statistics, so my first hypothesis is that there is more cross-national ownership of the forces of production, or indeed the forces of delivering service. It is certainly the case in the area of defence industries. Could I have your comments please.

*Dr Henderson:* I think that's right. That is obviously one of the aspects of globalisation but it can be stopped. I mean not so much under the European Union provisions, but most nation states can halt that if they wish to. There was a lot of not so much multinational ownership of the forces of production but certainly of trade, which is an aspect of that, before the First World War and it was halted by political decision. We have seen, as I mentioned, that Dr Mahathir in Malaysia has decided that in certain areas what is part of the globalisation system in the financial world is something that is not going to occur in Malaysia at this instance, and it is too early to judge what the consequence of that will be, except we know that it has happened. Vietnam has made it clear that it doesn't really want to get into this process. Now Vietnam's economy is being harmed by its unwillingness to get involved in the world economy and by its restrictions on trade, and all the anticipated trade that was going to occur there in the last ten years after the United States lifted the sanctions hasn't really occurred. It is a disappointing economy, it's a very centrally dominated economy, but it has made that decision.

So I'm saying that nation states, whether they be communist as in Vietnam or with a degree of authoritarianism or democratic societies because of political pressure, nation states can change this, and we haven't gone so far that it can't be changed. I note that even the Christian Democrats in Germany are beginning to question the European Union. I say beginning – I don't want to overstate the case – but I'm saying if they are beginning to question that then you can see that even some of these unions or agreements, or economic agreements can break down. I'm not saying they will break down but, ultimately, they all depend on political support. And if political support breaks down that will occur.

That's why I think, and governments obviously know this, it's so important that people feel they are getting a share of all this. Change is invariably difficult but if people feel that someone's going to benefit they are more likely to do it. I think that implies certain obligations on business leaders too. Displays of conspicuous consumption, huge annual salaries that seem unrelated to productivity or anything much else is something that I think that the business community has to be aware of too, because ultimately, like governments, the business community depends on political support – the support of the shareholders and in a sense the support of the electorate as well.

If we'd been having a meeting here 100 years ago and 'Globalisation Mark I' was underway, people would have said that the movement to world trade couldn't be stalled, but it was. So all I am saying is that the movement to greater globalisation

today probably won't be stalled, but it might be and we ought to take precautions. A nation of our size has a particular reason to do what we can to ensure that the process continues because for an immigrant trading nation and a democracy like ours, which is physically isolated, globalisation is very much in our interest.

# AIR POWER AND JOINT OPERATIONS DURING WORLD WAR II

COLONEL PHILLIP S. MEILINGER

## INTRODUCTION

In the military today there are a number of politically correct words and phrases. To cross them or to decry them is risky, a step taken, if at all, only after careful thought. One such minefield is the concept of jointness. We can no longer be parochial about our Service; we must be purple. In truth, this is a very good thing. Jointness is highly desirable and even essential if we are truly to maximise our military effectiveness. That does not mean every operation must consist of equal parts land, sea, and air. Nor does it mean we must forget that we are, first and foremost, airmen, soldiers, and sailors. I still believe that young officers must learn to be blue, or green, or brown, or white, before they can be purple. But at some point, the broadening must occur.

It was not always the case that jointness was seen as necessary, and certainly not desirable. In centuries past, it was possible to fight wars with sailors and admirals having virtually no contact with one another. Coordination was only necessary at the highest levels of government. The few times in war that armies and navies had to work together could be dealt with as the situation arose. There was certainly no need to practice bleeding. The words of Field Marshal Bernard Montgomery come to mind: 'A soldier should be sworn to the patient endurance of hardships, like the ancient knights; and it is not the least of these necessary hardships to have to serve with sailors'.

This attitude changed dramatically in the Second World War. It had to. Not because armies and navies were working together more closely than they had before, although that was part of it. Rather, jointness was forced on the Services because of air power. The airplane was essential to the conduct of operations on both land and sea - never mind that the airmen foresaw independent air operations occurring as well. Scarce air assets had to be apportioned between air, land, and sea commanders. Aircraft could fly from bases on land and attack targets at sea - and vice versa. The air, and airmen, could not be ignored. As a result, all the Services were, by necessity, drawn more closely together. This would not occur overnight, and it would not happen without several missteps along the way.

A key thing to bear in mind regarding joint operations is not that soldiers, sailors and airmen are inherently parochial and self-serving. In fact, that is generally not the case at all, especially in war when the stakes are too high to permit such pettiness. Yet, disagreements and tensions occur nonetheless. The reason for this is that soldiers, sailors and airmen have different views on the nature of war, on battle, on strategy, and on doctrine. To cite one example: the term 'centre of gravity' is used by all the Services, but it does not always mean the same thing. To a soldier, a centre of gravity is generally the enemy's great strength that must be broken or overcome. Thus, in

Clausewitzian terms, the object of an army is to find and destroy the enemy army.[1] To a sailor or airman, however, a centre of gravity is not generally seen as the enemy's great strength, but rather is often his great weakness or vulnerability. Thus, if a nation is dependent on its sea lines of communication or its railroad network, then those centres of gravity would be more appropriate targets because they avoid the enemy's strength while instead striking at his point of greatest vulnerability. Obviously, the selection of the enemy's centre of gravity will have a profound effect on military strategy. Thus, it is easy to see how differing interpretations of the same term can lead to fundamental differences of opinion between the Services. Other such diverse outlooks and perspectives permeate joint operations. My purpose in this paper is to identify some of these differences and show how they affected the use of air power in joint operations during World War II. I will focus largely on the European theatre, but believe the observations drawn also apply to a great extent for all theatres during the war. I will start with the Norwegian campaign in the spring of 1940.

## THE NORWEGIAN CAMPAIGN

Britain and France declared war on Germany in September 1939 over Poland, but could do little to help her against the German and Soviet onslaught. They were simply unwilling and unable to take the offensive on the western front. Instead, they hoped to buy time, build up their forces, gain world public opinion, attract allies from among the neutrals, and use the economic weapons of embargo and blockade to soften the Germans. The allies believed time was on their side. It soon became apparent, however, that the partnership between Germany and the Soviet Union made such a policy ineffective - neutrals remained cowed, world public opinion was irrelevant, the people in Britain and France were becoming bored by a war that saw no action, and the blockade leaked. The French and British therefore began to think of other options. The British wanted to mine the Rhine River so as to impede German commerce, but the French feared this would invite retaliation upon their cities and industry, so they refused. Instead, they looked to the peripheries of German power. The Reich was dependent on oil from the Caucasus: perhaps an invasion by the allies to capture this area would be useful. The major drawback, of course, was that such a plan involved war against the Soviet Union as well as Germany. This, nonetheless, was seriously considered, as was an attempt to assist Finland, which also would have entailed war against the Soviets.[2]

Another, less suicidal, action also looked north. Germany was heavily dependent on the high quality iron ore of Sweden. This ore, which came largely from the northern area of the country, was then shipped by rail to either Luleå on the Gulf of Bothnia, or through Norway to the ice–free port of Narvik. From there it travelled by freighter south to Germany. In 1937–38 over 40 per cent of all Germany's iron ore imports came

1 'To sum up: of all the possible aims in war, the destruction of the enemy's armed forces always appears as the highest.' Carl von Clausewitz, *On War* (translated by Peter Paret and Michael Howard), Princeton University Press, Princeton, 1976, p 99. I counted nineteen more instances in *On War* where Clausewitz stated this principle in similar, unequivocal terms.

2 J.R.M. Butler, *History of the Second World War: Grand Strategy, Vol. II: September 1939–June 1941,* Her Majesty's Stationery Office, London, 1957, pp 119-21.

from this source.[3] Although Sweden and Norway were declared neutrals, the allies nonetheless began considering options to deny this iron ore to Germany, while also ensuring its use for themselves. Within two weeks of the outbreak of the war, the First Lord of the Admiralty, Winston Churchill, suggested mining Norwegian territorial waters – a clear violation of international law – to force German ore freighters into the open sea where they could be met and destroyed by the Royal Navy.[4] As the months passed, this option, and even the thought of occupying parts of Norway, were increasingly considered and then planned, especially because it was feared Germany might act first and simply invade Sweden and Norway to ensure access to the iron ore. On 8 April 1940, therefore, the Royal Navy began laying mines in Norwegian territorial waters.

The Germans were not of course idle during this period. Indeed, they were concerned about their access to Swedish ore and the safety of the Norwegian ports. In February 1940, for example, the Royal Navy had violated the territorial waters of Norway to intercept and capture the German transport ALTMARK. This, along with memories of the allied starvation blockade of World War I that killed hundreds of thousands of German civilians, warned Germany that her access to the trade of neutrals could not be guaranteed. In addition, Norway would serve as a valuable submarine base for the Reichsmarine that would outflank the allied blockade of Germany proper. As a consequence, on 3 March 1940, Hitler ordered detailed plans developed to occupy both Denmark and Norway to protect access to the Baltic and to ensure the ore lines remained intact. He wanted the Wehrmacht to move on Norway 'quickly and with force'.[5] After a series of delays, the invasion of Denmark and Norway was set for 9 April 1940 – coincidentally, the day following the allies' mining operation.

Since Napoleonic times Germany had enjoyed a reputation for meticulous and effective military planning. The Great German General Staff was the model for the military staffs of most major powers.[6] Germany was not yet adept however – nor indeed was anyone else – in the planning of major joint operations. Nonetheless, things started auspiciously. A small working group headed by senior officers from the navy, army, and air force began drawing up plans. Almost immediately, however, problems arose over the issue of command and control. The joint planning group posited a theatre command with one officer having control over all the forces in his theatre. This joint commander would be a soldier. Reichsmarschal Hermann Göring immediately protested: he would not allow air units to come under the operational control of any other Service. The irony of this situation was that whereas the navy had studiously ignored all attempts at joint training, exercises, or doctrine formulation during the interwar period, the army and air force had developed a close and effective relationship.[7] Now, Göring seemed to disavow such a relationship. During the

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3 Butler, *History of the Second World War*, pp 188-89; Klaus A. Maier, et al (Eds), *Germany and the Second World War, Vol. II: Germany's Initial Conquests in Europe*, Clarendon, Oxford, 1991, pp 184-85.

4 Butler, *History of the Second World War*, p 93.

5 Maier, *Germany and the Second World War*, p 192.

6 For an excellent account see Walter Goerlitz, *The German General Staff, 1657-1945*, Praeger, New York, 1966.

7 James S. Corum, *The Luftwaffe: Creating the Operational Air War, 1918-1940*, University Press of Kansas, Lawrence, 1997, passim, but especially Chapters 4, 5 and 7.

campaign, the commanders of air, land, and sea forces would receive their orders separately from Germany.

The German plan called for a series of quick, powerful, and wide-ranging attacks. Denmark would be seized and its two major airfields at Aalborg would be immediately put to use by the Luftwaffe ferrying troops and supplies into Norway and serving as a base for long-range strike aircraft. (Eventually, nearly 30,000 German troops would be airlifted into Norway by the Luftwaffe – the first major airlift of the war.) The five major port cities of Norway would be attacked simultaneously: Oslo, Bergen, Trondheim, Kristainsand, and Narvik, as well as the major airfield at Stavanger. These attacks would employ most of the German surface fleet, six army divisions and a paratroop battalion, and approximately 1,000 aircraft, half of which were virtually the entire airlift capacity of the Luftwaffe.

The plan went off well despite the usual 'unforeseen' problems with bad weather and despite the unexpectedly determined resistance of some Norwegian units. By the end of the first day, the situation was clearly under control. Denmark surrendered, and the five major Norwegian cities fell, as did the main airfields near Oslo and Stavanger. (Of interest, the first major combat paratroop drop in history secured the airfield at Stavanger.) German losses, however, were unexpectedly heavy: two cruisers sunk and another heavily damaged.[8] Moreover, the Norwegian Government failed to surrender and continued to fight. The next day, allied help arrived, but it would prove to be too little and too late.

Allied joint planning was similarly in its infant stages. Although a joint planning group was established in March 1940 to draw up a scheme for a pre-emptive landing in Norway, it was not effective. For example, it was not thought that air units would even be necessary for the initial stages of the operation, an incredible oversight. Indeed, one historian has stated that the joint planning staff 'displayed an amateurishness and feebleness which to this day can make the reader alternately blush and shiver'.[9] To make matters worse, relations were strained between the navy and air force over the issue of the Fleet Air Arm (FAA). When the Royal Air Force (RAF) was established in 1918 it was given control over the Navy's aviation assets. For the next two decades the Admiralty bitterly protested this arrangement. In 1937 the British Government returned the FAA to the Navy, but the matter still rankled.[10] Caught between the warring sides for 20 years, the FAA was an unlucky stepchild that suffered in the crossfire. In 1940 it was armed with obsolete aircraft such as the Swordfish, an open-cockpit biplane, and the Skua, which was totally outclassed by modern fighters.

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8 For the entire campaign, naval losses on both sides were heavy: the allies lost one carrier, two cruisers, nine destroyers and six submarines. The Germans lost three cruisers, ten destroyers and four submarines. Although roughly comparable, Germany could ill afford such losses. In addition, both sides suffered around 5,000 casualties among their personnel. Maier, *Germany and the Second World War,* p 218.

9 John Terraine, *A Time for Courage: The Royal Air Force in the European War, 1939-1945,* Macmillan, New York, 1985, p 115; Denis Richards, *Royal Air Force 1939-1945. Vol. I: The Fight at Odds,* Her Majesty's Stationery Office, London, 1974, p 78.

10 Phillip S. Meilinger, 'Between the Devil and the Deep Blue Sea: The Fleet Air Arm Before World War II', *Royal United Services Institute Journal,* 144, October 1999, pp 73-78.

Like the Germans, the allies did not institute a joint theatre command for Norway, although British doctrine called for such a headquarters. Instead, in the Narvik area Admiral Lord Cork commanded naval forces, and Major General P.J. Mackesy headed the ground troops. Both, however, received orders from London – sometimes contradictory. Moreover, the two men seldom saw eye to eye. Cork, for example, thought the army should assault Narvik forthwith, but Mackesy considered this 'sheer bloody murder' and refused. Instead, he landed 45 miles away on an undefended island and determined to approach Narvik by a systematic land operation, all the while Cork chafing at the 'delay'.[11] Such problems were aggravated when Mackesy established his headquarters on land, while Cork's remained afloat. Mackesy was eventually relieved in the hope joint relations would improve. However, his replacement, Lieutenant General Claude Auchinleck, arrived just in time to make plans for the evacuation of the allied forces.

To sum the allied campaign that was launched to liberate Norway: the allies (British, French, Free Poles and Norwegians) formed two task forces – independent of each other – to land and reoccupy Trondheim and Narvik. Trondheim, however, was well within range of Luftwaffe aircraft and allied operations there were a disaster. Major General Carton de Wiart signalled London the day following his landing: 'I see little chance of carrying out decisive, or indeed, any operations unless enemy air activity is considerably restricted'.[12] The following day he was even more emphatic: there was 'no alternative to evacuation' unless he could gain air superiority.[13] With its nearest airbase over 600 miles distant, the RAF could not intervene, and the FAA was simply outmatched. Moreover, a consequence of German air superiority was that the allies were forced to operate in the blind regarding the location and disposition of the enemy. It also became apparent that even if the allies had been able to recapture Trondheim, they could not have held it in the face of the Luftwaffe. Within a fortnight the allies evacuated their forces from central Norway, losing two more destroyers to the Luftwaffe in the process.

The situation at Narvik was not quite as dismal for the allies simply because it was so far north even the Luftwaffe had difficulty covering the area. The RAF, through Herculean efforts, managed to carve three airstrips out of the snow and ice and deploy some Gladiators and Hurricanes, transported north by aircraft carrier. The German garrison had been resupplied by seaplane and flying boat; these were driven off by the RAF. As a result, allied ground forces were able to make some headway. Unfortunately, on 11 May 1940 the Battle of France began and Norway quickly became a sideshow. Before the allies had even retaken Narvik they were already planning its evacuation. It finally fell on 25 May, but the allies returned to their ships and departed two weeks later. The Germans quickly moved back in, and the Norwegian campaign was over.

Unquestionably, the key observation of the entire campaign was the necessity for air superiority. The RAF's bases were too far distant for it to intervene effectively, and the FAA's outmoded aircraft were of limited utility. As a consequence, the Luftwaffe controlled the air, and the Royal Navy could not maintain a presence in the face of that

11 Butler, *History of the Second World War*, pp 132–34, 141, 149.
12 Richards, *Royal Air Force 1939-1945*, p 86.
13 *ibid.*

control. The sole exception was at Narvik. This allied assault was ultimately successful, but only after the RAF had gained local air superiority. As planners phrased it: 'The crux of the Narvik operations would be our ability to establish the necessary anti-aircraft defences and to operate fighters from a shore aerodrome'.[14] This was indeed the case. The allies hoped that a landing at Narvik would allow them to establish a foothold, build airbases, and then use land-based air power to both interdict the ore rail line in Sweden, and to gradually push their forces farther south to re-conquer Norway. Such were their long-range plans that went unfulfilled.

It had been a major tenet of naval theorists that one of sea power's great strengths as a strategic weapon was its ability to prevent an enemy from conducting a major amphibious operation. Or, if for various reasons such an operation was successfully initiated, the Royal Navy would be able to strangle it by preventing resupply to the troops ashore. This Mahanian concept was a serious miscalculation that did not take into account the emerging importance of air power. The British Cabinet initially believed, for example, that sea power would allow them to dispose of the German landing forces 'in a week or two'.[15] Instead, the tone of the campaign was set on the first day when a portion of the British fleet was intercepted far out at sea by the Luftwaffe. Without air cover, one destroyer was sunk and the battleship RODNEY was damaged. The fleet withdrew and moved north out of range of German aircraft.[16] The allies hoped that sea superiority would allow them to land in Norway, after which they could seize or establish air bases for defence of the lodgment. This was impossible because the Luftwaffe had already achieved air superiority over the littoral. In short, control of the air determined who would control the surface beneath it.

I should also note here a false lesson regarding air power in this campaign. It did not prove that land-based air power was superior to sea-based air power. For two decades the RAF had maintained that for technical reasons of weight and performance, carrier-based aircraft were inherently inferior to land-based aircraft. Although the Luftwaffe did indeed make short work of the FAA's Swordfish and Skuas, the lesson here is simply that modern aircraft are superior to obsolete ones.

There were certainly other aspects of this campaign that bear remembering. For example, modern warfare would be joint warfare. The days when admirals and generals could blithely ignore each other while fighting their separate wars was over. The arrival of air power, necessary for both land and sea operations, helped make joint planning and joint command an absolute necessity. The lack of jointness on both sides manifested itself in numerous ways. There was no unity of command, and conflicting orders were sent to component commanders regarding the same operation. Intelligence was poorly shared, so numbers, quality, and location of enemy aircraft, vessels, and shore batteries were often unknown to the key parties.[17] Doctrines between the Services were seldom compatible, and the lack of joint exercises during peacetime became

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14 Butler, *History of the Second World War*, p 142.

15 *ibid*, p 128.

16 Geoffrey Till, *Air Power and the Royal Navy, 1914-1945*, Jane's Publishing, London, 1979, p 15.

17 Although the British had broken the German Enigma codes, they were totally unprepared for the volume and complexity of the signals generated by the Germans during the Norwegian campaign. As a consequence, the intelligence collected was late, incomplete, and inadequately disseminated to the commanders who needed it. F.H. Hinsley, et al, *British Intelligence in the Second World War*, 5 Vols, Her Majesty's Stationery Office, London, 1979-90, Vol I, pp 136-43.

painfully obvious. This was especially apparent in the poor results gained by naval gunfire in support of troops, and, on the allied side, close air support of ground forces. In truth, Germany's joint planning, command and control, and operations were more effective than that of the allies. However, it was the allies who took the lessons of Norway more to heart. They learned more quickly than the Germans. In the future, it was they who excelled in the area of joint operations.

## D-DAY AND THE NORMANDY CAMPAIGN

By 1944 things had changed. The US and USSR were now British allies and the French were conquered. Although in true Clausewitzian fashion the US Army Chief of Staff, General George C. Marshall, wanted to strike quickly and directly at the main German force in France, wiser counsel prevailed. Instead, the allies attacked in North Africa, Sicily and then Italy, all the while gaining experience and confidence for their commanders, staffs, and troops. But now, the big invasion – OVERLORD – was coming, and it was time to nail down the details.

Although the focus of this essay was initially intended to be on joint operations, it quickly became apparent to me that the issue of combined operations – those involving more than one country – was inextricably bound up with it. Allied commands had become combined: General Dwight D. Eisenhower's deputy was Air Chief Marshal Arthur Tedder; his staff was a mix of, mainly, American and British officers from all the Services; and the units he commanded were similarly a mixture of nationalities and Services fighting and working side by side. Well, if joint operations are often problematic, the introduction of the combined factor adds significant layers of complexity. As a result, I have found it necessary to broaden my scope to some extent. Given that our future military operations will no doubt increasingly involve coalitions and/or alliances, I think this is a useful expansion.

The words of Field Marshal Lord Slim are always useful to consider in this regard:

> It is astounding how obstinate allies are, how parochially minded, how ridiculously sensitive to prestige and how wrapped up in obsolete political ideas. It is equally astounding how they fail to see how broad-minded you are, how clear your picture is, how up to date you are and how cooperative and big-hearted you are. It is extraordinary.

As was proven over Norway, air superiority is the first priority, not just for an air force, but for the entire joint force. This was clearly recognised by OVERLORD planners. It is useful to note that Normandy was only one of three landing sites proposed for OVERLORD. The other two were in the Pas de Calais and Dieppe areas, but they were out of effective range for the aircraft based in England. The planners were not about to repeat the mistake of Norway. As a consequence, an operation was begun, termed POINTBLANK, whose main purpose was to defeat the Luftwaffe and achieve air superiority over France. This was easier said than done. The Luftwaffe, well aware of the danger of getting into an attritional battle for command of the sky, simply refused to engage allied fighters over France. The RAF attempted fighter sweeps to goad the Germans into action, but they were unsuccessful. It was therefore plain that in order to

force a fight, allied bombers would have to attack something that Germany was compelled to defend. In short, the bombers had to be the bait that would lure the Luftwaffe into battle. But that was not enough. The bombers could not protect themselves adequately, as was demonstrated in the fall of 1943.

The arrival of long-range escort fighters, the Thunderbolt and Mustang, along with their jettisonable fuel tanks, allowed the air battle to occur on the favourable terms desired by the allies. In February 1944 an unusual string of clear days allowed a maximum effort by RAF Bomber Command and the heavily escorted Eighth and Fifteenth Air Forces. Their main targets were aircraft and engine manufacturing plants, as well as ball bearing factories. The Luftwaffe rose to the challenge, and the results of 'Big Week' were dramatic. The bombers dropped more tonnage in six days than they had in the previous year. Although the allies lost 426 aircraft – mostly heavy bombers – the Luftwaffe lost nearly 300 fighters in air combat. Moreover, the destruction of the aircraft factories was so great that hundreds more aircraft were damaged or destroyed.[18] Even at the time observers recognised this as a turning point in the air war. Air superiority was achieved, and this permitted not only a more effective strategic bombing campaign, but also a landing in Normandy that would enjoy a far better chance of success.

As D-Day approached, the allies had nearly 13,000 aircraft ready to strike, of which 5,400 were fighters; the Luftwaffe had 300 fighters to defend against them. On the day of the invasion, the allies flew 10,585 sorties over the beachhead. The Luftwaffe, its back broken three months before, could manage a mere 100. Only two fighters were able to penetrate allied air defences to the beach area.[19] The importance of this to the success of the invasion cannot be exaggerated. Field Marshal Erwin Rommel, the German commander in France, said simply that his operations in Normandy were 'tremendously hampered, and in some places even rendered impossible' by the 'immensely powerful, at times overwhelming, superiority of the enemy air force'.[20] General Eisenhower later stated in emphatic terms how crucial air superiority was to OVERLORD:

> The Normandy Invasion was based on a deep-seated faith in the power of the air force in overwhelming numbers to intervene in the land battle ... Without that air force, without the aid of the enemy air force out of the sky, without its power to intervene in the land battle, that invasion would have been fantastic it would have been more than fantastic, it would have been criminal.

Air superiority is not, however, an end in itself. Once achieved, it must be exploited, and that speaks to Eisenhower's comment concerning the ability of air power to intervene in the land battle.

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18 Stephen Lee McFarland and Wesley Phillips Newton, *To Command the Sky: The Battle for Air Superiority over Germany, 1942-1945*, Smithsonian Institution Press, Washington DC, 1991, pp 190–91.

19 R.J. Overy, *The Air War, 1939-1945*, Europa, London, 1980, p 77; McFarland and Newton, *To Command the* Sky, p 241.

20 Basil H. Liddell Hart (Ed), *The Rommel Papers*, Collins, London, 1953, p 476.

## AIR INTERDICTION

One of the ways in which air superiority is exploited is through the use of tactical air power in cooperation with ground operations. Such cooperation can take the form of reconnaissance, airlift, artillery spotting, air interdiction, or close air support. I will now focus on air interdiction (AI). A great deal has already been written on the subject, but I hope to provide some insight into what makes such joint operations successes or failures.

In a discussion of joint operations, which are inherently contentious, air interdiction is a subject that inspires a special degree of inflammation. Although airmen and soldiers in World War II sought the same ends, they often disagreed over the methods of achieving them. Both wanted to win wars as quickly as possible with the least expenditure in human life. Soldiers, however, saw the ground battle as the decisive event that would achieve the goal of victory; thus, all actions and all weapons should be directed at facilitating victory in battle. Airmen hoped that a ground battle could be avoided. Ideally, strategic bombing would so soften the enemy's will and capability that a ground battle would be secondary. If that were an unrealisable goal, then the isolation of the battlefield via air interdiction would be the next best use of scarce and high-value air assets. If necessary, if the ground battle was already joined, then in certain circumstances aircraft could perform close air support (CAIRS). However, given the cost of aircraft and their crews, and given their vulnerability while performing CAIRS, airmen were reluctant to give priority to that mission if organic ground firepower such as field artillery could be used instead. The US Army's 1940 doctrine manual on tactical air operations stated the issue succinctly: 'Support aviation is not employed against objectives which can be effectively engaged by available ground weapons ... [and] aviation is poorly suited for direct attacks against small detachments of troops which are well entrenched or disposed'.[21] In fact, CAIRS was termed a 'phase three operation', meaning that it was third in priority for tactical air assets, behind air superiority and interdiction. Soldiers were not impressed with this line of reasoning.

Air interdiction obviously requires close cooperation between air and ground forces. Performed extensively in the Great War, it became one of the fundamental roles of the American Air Service, later Air Corps, in the two decades following the war and was so codified in Army doctrine. In Britain, then Wing Commander John C. Slessor wrote, what I believe, is the best book on air power theory prior to World War II, *Air Power and Armies*. Bearing in mind the book is a collection of lectures Slessor gave while an instructor at the Army Staff College, we can see that he deliberately spoke to an audience of soldiers as well as airmen. As a consequence, Slessor posited that an expeditionary joint force had already been deployed to the continent, as in the Great War, and thus the air and ground units involved must plan together and must fight together. *Air Power and Armies* is therefore a detailed and insightful work that examines how a joint force operates. Slessor discussed command and control, logistics, force structure, intelligence, and targeting. He concluded, as did his American

21 Daniel R. Mortensen, *A Pattern for Joint Operations: World War II Close Air Support in North Africa*, Office of Air Force History and US Army Center of Military History, Washington DC, 1987, pp 12-13.

counterparts, that air interdiction is more effective and efficient than close air support, although the latter will be necessary under certain circumstances. He even stated that there were occasions when ground forces should support the air effort, a heretical belief among ground officers at the time.[22]

Prior to World War II, interdiction was a major mission of both the RAF and the Air Corps. Doctrine manuals in both Services wrote about it in depth, and many fine airmen devoted their careers to its practice. It should be noted here, contrary to what some may say, that the tactical airmen in Britain and the US did not suffer for their beliefs. Slessor, for example, went on to become the Chief of Air Staff with the rank of Marshal of the RAF, and Trafford Leigh-Mallory, a fighter pilot and commander of the Allied Expeditionary Air Force for OVERLORD, was an Air Chief Marshal at the time of his death in 1944. In the US, George Kenney, later one of the most senior American airmen of World War II, was an attack aviation instructor at the Air Corps Tactical School from 1927 to 1930, and both Hoyt Vandenberg and Nathan Twining, later Air Force Chiefs of Staff, began their careers as attack pilots.

Unfortunately, American attack aircraft of the early 1930s, like contemporary pursuit aircraft, lagged in performance. In the leapfrog nature of technological development, bombardment aircraft were temporarily in the ascendancy. Aircraft like the B-10 clearly outclassed the P-26 and A-12. By the beginning of the war, however, two-engined light and medium bombers like the A-20 Havoc, A-26 Intruder, and B-25 Mitchell had become standard. These designs proved useful and effective during World War II, but especially against interdiction targets behind the front. In addition, fighter-bombers like the P-47 Thunderbolt and Typhoon were also extremely successful, as subsequent combat would show.

The allies conducted many air interdiction campaigns during the war. The first was in North Africa. Although the British had been fighting the Germans and Italians there for over a year, it was the TORCH invasion in November 1942 that propelled air interdiction into the forefront. The conditions in North Africa were unique and made interdiction efforts there particularly effective. In essence, virtually everything the German forces needed had to come from Europe either by boat or by airplane. Supplies generally travelled by rail to southern Italy where they were ferried by boat across to Sicily. There they were put back on trains and shipped to the island's western ports. Re-embarking by boat, they travelled the 90 or so miles across the Mediterranean to North Africa. This route was heavily mined by the Italians to protect the convoys from the Royal Navy. This, however, made their routes predictable and more vulnerable to air attack. The Northwest African Air Force under the command of General Carl Spaatz bombed the African, Sicilian and Italian ports and rail lines incessantly, while also attacking German and Italian convoys en route. The intensity of the bombing in Sicily caused increased use of seaports on the Italian coast, which then shipped goods directly to Africa. This, however, drove the convoys out of mine-protected channels and into open water where the Royal Navy was waiting for them.

This highly symbiotic interdiction effort meant that the amount of supplies getting through to the Afrika Korps was less than 50 per cent of that required. The German

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22 Wing Commander John C. Slessor, *Air Power and Armies*, Oxford University Press, London, 1936, p 82.

commander, General Hans von Arnim, had stated he needed 69,000 tons of supplies each month to sustain his 350,000 personnel. By April 1943 he was getting less than 30,000 tons.[23] Attempts to resupply the Afrika Korps by air were largely unsuccessful due to allied air superiority. When supplies did make it through the allied gauntlet to Africa, they were then shipped by truck to the front line units. Given the terrain, these roads and their convoys were easily detectable and hittable. In short, the Afrika Korps was seriously constrained by supply shortages caused by allied air and sea interdiction efforts. On 10 April, the Allies intercepted a message stating that a German armoured division, out of fuel, had abandoned its equipment and was retreating on foot.[24]

Italy was a totally different story. The weather and terrain were significantly different from that in North Africa and most supplies moved by road and rail. Attempts to interdict traffic and supplies far from the front, with numerous work-arounds and bypasses available, rendered significantly less results than had similar air interdiction efforts in North Africa. Statistics for this operation, regrettably called STRANGLE, tell an interesting story. Allied intelligence estimated that the Italian transportation network had the capacity to move 100,000 tons daily. Yet, the 19 German divisions in Italy required only 5,500 tons to operate, even less if combat operations were not in progress. Thus, even if allied air power was able to stop 95 per cent of all traffic – an impressive feat – that still would have been insufficient to strangle the German forces.[25]

Let me also note some qualifiers. First, the German army traditionally needed less supplies than did its allied counterparts. Therefore, allied intelligence figures, based on allied consumption, were too high when assigned to the Germans. Second, the Germans were able to derive supplies locally far more easily than were their counterparts in the African desert. As a result, the Germans were not starved for supplies and were able to conduct a very effective defensive ground campaign against the allied armies. On the positive side, however, the allied interdiction campaign placed an enormous additional burden on the German forces. The destruction of rail lines meant work crews to repair them, while also placing a greater burden on motor transport. This in turn meant that combat troops could not react as quickly as they would like: their transports and supply personnel were already busy. Offensive operations also suffered because the incessant air attacks meant that more troops and weapons had to be devoted to defending the rail and road lines and their work crews. This disruption of German supply lines had more important effects – even if unintended by planners – than the destruction of those forces by allied aircraft, impressive though it was. This was evidenced in May, when after two months of STRANGLE operations the allies launched a ground offensive, DIADEM. German forces, for the first time in the Italian campaign, broke quickly and fled north. Rome fell one month later.

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23 Eduard Mark, *Aerial Interdiction in Three Wars*, Center for Air Force History, Washington DC, 1994, pp 36, 45.

24 *ibid*, p 46.

25 In reality, the allies overestimated German requirements considerably. Mark, *Aerial Interdiction in Three Wars*, p 165, notes that in April 1944 the German forces consumed less than 3,000 tons of supplies daily.

In Normandy the problem was of a different nature. German defences were so strong that the planning for the landings was long and complex. In a real sense, actions before D-Day would be crucial to the success of the landing itself. Air power, both strategic and tactical, would play a major role – all recognised that – but what precisely that role was to be was a subject of much debate between the Services. One of these differences occurred over the issue of targeting: ultimately, the decision made was to use air power as a mighty interdiction force.

When General Dwight Eisenhower asked for ideas on how best to use his overwhelming air assets to further the chances of success for the invasion, two targets presented themselves, oil and rail lines. Both were important targets and were recognised as such by all concerned. But in war, a commander or planner must prioritise, and must do so for the good of the entire joint force. Given limited resources, which of these two target systems was most important and more likely to harm the Germans? The debate tended to split along national lines. American airmen pushed for attacks on oil; whereas, British airmen preferred rail lines – or as they called them, 'transportation targets'. To the Americans, because all aircraft, tanks, trucks and ships ran on petroleum fuel, the destruction of German oil refineries would have a devastating effect on the entire German war machine. The British, on the other hand, pointed to the German and French rail network that supplied the entire Reich, not just the military, with the resources needed to sustain the total war effort. If this transportation network were disrupted, Germany's economy would grind to a halt.

Because the airmen could not agree among themselves they turned to the Supreme Commander, General Eisenhower, for a decision. Eisenhower's rationale was simple and direct. He realised the oil plan would have catastrophic effects on Germany, but he saw its effects as more long-range and more time consuming. The rail plan, on the other hand, would tend to have more immediate results. Moreover, it would have a more direct impact on the invasion itself: if the rail lines in France and Germany were cut, it would be difficult for the Wehrmacht to rush reinforcements to the lodgment area. Eisenhower therefore opted for the rail plan, and for the three months prior to the invasion, and indeed for nearly three months afterwards, the rapidly growing weight of allied air power was directed primarily at the German transport network to ensure the success of the invasion.[26]

The results of the air interdiction campaign were dramatic. By D-Day every bridge across the Seine had been dropped. Over 50 rail centres in France were destroyed, which resulted in rail traffic in France declining by 60 per cent between 1 March and D-Day; in the crucial northern region it dropped by 75 per cent. Nearly 3,000 locomotive engines were destroyed, 33 per cent of the total, with a further 2,300 damaged and out of use because the facilities needed to repair them had also been destroyed by air. To make matters worse, Germany had not the motor transport in France to compensate for the loss of so many trains and rail centres.[27]

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26 For the best accounts by participants, see: for oil, W. W. Rostow, *Pre-Invasion Bombing Strategy: General Eisenhower's Decision of March 25, 1944*, University of Texas Press, Austin, 1981; and for the transportation argument see Solly Zuckerman, *From Apes to Warlords*, Harper & Row, New York, 1978. For a balanced account see Alan J. Levine, *The Strategic Bombing of Germany, 1940-1945*, Praeger, Westport, 1992.

27 Mark, *Aerial Interdiction in Three Wars*, pp 238–241.

This disruption translated into severe reinforcement and supply problems for the German defenders. There are several epic tales of German divisions being decimated and delayed en route to the lodgment area, notably Panzer Lehr, 3rd Parachute, and 77th Infantry. In fact, plans called for 17 divisions to be moved in to reinforce the defenders in the beachhead area by 18 June; instead, only five made it. Those that did arrive were severely constrained by fuel and ammunition supplies. One of the few bright spots for the Germans, if it can be called that, is that the bridges over the Loire had been deliberately spared. It was feared that attacks on those targets would tip-off the location of the invasion – the Germans believed almost until July that the Normandy landings were a feint and the real attack would fall in the Calais area.[28] These arteries were some of the few that still functioned relatively well in the period around D-Day. Overall, British inspection teams estimated that air attacks destroyed approximately 10,000 vehicles and guns during the campaign in France.[29]

What are the lessons to be learned from these three air interdiction campaigns? First, planners must have realistic objectives. It is virtually impossible to isolate totally a battlefield – something will always get through. As STRANGLE showed, even if 95 per cent of all supplies are stopped, interdiction is unsuccessful if the remaining five per cent is sufficient for enemy needs. At times, destruction may not even be feasible. In such cases the disruption of enemy logistics, causing inefficiency and forcing redundancy, may be the end result of air interdiction. It is then necessary to re-evaluate the entire interdiction campaign to ensure the disruption caused to the enemy exceeds the effort we expend to create that disruption.

Intelligence on enemy dispositions, supplies, stockpiles, intentions, defensive capabilities, and activities is crucial. There were numerous occasions in North Africa, for example, when Ultra intercepts had given us the exact sailing time, routes, and even specific cargoes of Axis resupply convoys. On the other hand, not knowing the exact requirements for the German forces in Italy caused planners to underestimate the level of destruction necessary to truly 'strangle' them. Adequate intelligence for air interdiction also includes information not generally thought important for other operations: the weak points of specific route segments or networks, engineering designs on various types of bridges, aqueducts and viaducts, and the volume of traffic along certain rail lines. If the intelligence function is not geared to collect such information, the air interdiction effort will suffer.

Terrain and weather can determine the focus, tactics, and results of an air interdiction campaign. In North Africa they favoured allied efforts; in Italy they did not. The narrow channel between Sicily and Cape Bon in Tunisia was an ideal venue for interdiction. All convoys having to traverse that short distance across open water were easy prey to aircraft based in Algeria and Malta; if they ventured outside their mine-protected channels to avoid air attack, they came under the guns of the Royal Navy. On the other hand, the weather in Italy cancelled nearly 50 per cent of the sorties scheduled

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28 Mark, *Aerial Interdiction in Three Wars*, pp 246-249, 257. For an excellent account of the deception campaign for OVERLORD see Michael Howard, *British Intelligence in the Second World War, Vol. 5: Strategic Deception*, Her Majesty's Stationery Office, London, 1990, Chapter 6.

29 Ian Gooderson, 'Allied Fighter-Bombers Versus German Armour in North-West Europe 1944-1945: Myths and Realities', *Journal of Strategic Studies*, 14 June 1991, p 225.

for STRANGLE. It is important to note in this regard that such weather problems are disproportionately severe to the interdictor. During such periods when aircraft are grounded, the enemy can exert great efforts to move supplies, replenish stockpiles, re-position forces, and improve defences. When the weather breaks, the air interdictors face a far more powerful and rejuvenated enemy. Perhaps even more importantly, it became clear that the inability to conduct air interdiction effectively at night was a serious shortcoming. Until overcome, the enemy would have the 'privileged sanctuary' of the night and could use it to undo much of the damage aircraft had done during the day.

It must be remembered that the enemy is not a static, two-dimensional wire diagram: he is a living organism that responds to various stimuli in a variety of often unpredictable ways. He will react to our moves by defending himself, hiding, camouflaging, building decoys, redoubling his efforts, building work-arounds, using substitute materials, possibly panicking, but more likely being devilishly ingenious. It was discovered, for example, that German work crews quickly repaired the rail cuts made by aircraft in as little as four hours.[30] Thus, air interdiction cannot be an event, it must be a process. Persistence is essential. We must continually adjust, just as the enemy is adjusting to us.

Related to intelligence requirements but important enough to be listed separately, is the need for effective analysis. How do we know if our efforts are successful? Destroying bridges is irrelevant if their destruction does not result in an appreciable reduction in the flow of supplies. As noted, dropping the bridges over the Seine was useful, but the maximum benefits would have been gained by destroying those over the Loire as well. Just because something can be destroyed does not mean it is important.

Air, ground and sea forces must understand each other's strengths, weaknesses and methods. Soldiers, sailors and airmen often have differing views on the nature of strategy and of battle. They often disagree regarding issues of timing and mass. Their intelligence requirements are generally different. Their command and control networks are usually incompatible with one another. These differences are not insurmountable. Joint education, joint training, joint planning, and joint staffs can resolve most of these issues. The allies were learning their trade in North Africa: by Normandy they knew their business very well.

Air and ground operations must be made symbiotic. Initially, airmen chafed at being considered a 'support' service for the ground; later, soldiers would rebel at the thought that their operations should assist an air effort. Both needed to get over it. There are times when each of the two arms can support or be supported by the other. Air interdiction is far more effective, for example, when ground action forces the enemy to move or expend supplies. STRANGLE was only moderately successful until DIADEM was launched. At that point the German supply lines, already stretched thin, broke under the strain. Similarly, the numbers of tanks, trucks, and other vehicles destroyed went up dramatically after the landings at Normandy when the Germans attempted to move reinforcements and supplies. This type of cooperation can only be achieved by

30 Robert E. Schmaltz, 'The Uncertainty of Predicting Results of an Interdiction Campaign', *Saber Measure (Alpha) Report*, December 1969, p 9.

close working relations. Ideally, the air and ground staffs should be collocated, liaisons should be numerous, and commanders should attend each other's staff meetings.

Last but not least, air superiority is crucial. The air interdiction mission is an inherently dangerous one. This was especially true for the fighter-bombers that flew armed reconnaissance missions over Europe looking for targets of opportunity. Heavy enemy air activity adds tremendously to this hazard. Moreover, exposure to ground-based air defences is best minimised. This means that a target should be destroyed on the first attack. If enemy defences are heavy, they may not only induce losses, but they may cause inaccuracy in the attackers. This could necessitate a re-strike, which in turn would further increase the risk.

Overall, air interdiction was a success story in North Africa and Europe, but this was only through the dint of thorough planning and hard work. As with many things, lessons learned are perishable. They would need to be relearned in the wars that followed.

Let me make another point on the tactical air power issue. It is commonplace for historians to decry the 'unbalanced nature' of the Air Corps and RAF during the interwar years and to accuse the airmen of slighting the needs of tactical air power in favour of strategic bombing. This argument generally continues that as result of this distorted emphasis, America entered World War II with inadequate tactical aircraft – in both numbers and performance – and inadequate tactical air doctrine. In one account, for example, authors state that in 1935 there were 45 squadrons in the Air Corps, and 'the army field headquarters had direct control of only 10 observation squadrons'. They go on to state that 'only 7 [squadrons] were committed to the ground attack mission'. They therefore conclude that the rest of the Army Air Corps had missions related to 'bombing enemy industrial sites or invading fleets or protecting air bases and cities from enemy bombers'.[31]

Well, as Mark Twain once said, there are lies, there are damned lies, and there are statistics. The authors provide no source for their statistics, but the most authoritative reference provides some significant differences. For example, in 1939 there were 57 squadrons in the Air Corps, and of those, 29 reported to GHQ Headquarters, 17 more belonged to the overseas commands – Hawaii, Philippines and Panama Canal – eight were assigned to the various Army Corps within the US, and three more were attached directly to the War Department.[32] In short, because there was no separate Air Force, all of the squadrons in the Air Corps reported directly to Army ground commanders. Moreover, to state that the bulk of the Air Corps had missions that directly related to strategic bombing is simply untrue. The Army commanders in charge could direct that none of these units be used for strategic bombing. Reconnaissance and pursuit, similarly, could and often did perform missions totally unrelated to the strategic offensive. Gaining air superiority was recognised by the Army as the first priority of the air arm. This air superiority was necessary to successfully conduct ground operations—not just to protect cities or air bases.

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31 Williamson Murray and Allan R. Millett, *A War to be Won: Fighting the Second World War*, Harvard University Press, Cambridge, Massachusetts, 2000, pp 32-33.

32 Maurer Maurer, *Aviation in the U.S. Army, 1919-1939*, Office of Air Force History, Washington DC, 1987, pp 472-74.

In a related matter, the authors go on to note that the Air Corps budget 'jumped' to 15 per cent in 1935.[33] Once again, there is no source given, but the chief authority for this period notes that this increase occurred in 1937, not 1935 (and it dropped back to 14.1 per cent the following year). More importantly, however, the fact is the Air Corps received only 11.2 per cent, on average, of the Army budget during the entire interwar period. Note, this is not one-ninth of the US defence budget, just one-ninth of the Army budget, or perhaps five per cent of the annual defence budget.[34] This is hardly a flood of money being directed towards Army air power. More to the point, what were those meagre funds being used for? Certainly not strategic bombers. On 1 September 1939 the Air Corps had a grand total of 26 heavy bombers in their possession. Over the next two years they procured a total of 20,914 aircraft; of these, a mere 374 – or 1.7 per cent – were heavy bombers.[35] At the Air Corps Tactical School (ACTS), the alleged hot-bed of radicalism where the air zealots supposedly spun their theories of strategic bombardment to the exclusion of all else, it is important to note that in 1935 only around half of the curriculum even covered air matters. Fully 47 per cent of the subjects taught at ACTS dealt with sea power, ground operations, intelligence, logistics, administration, and the like. Only ten per cent of the School's curriculum concerned strategic air power.[36]

Unquestionably, airmen placed too great a faith in air power's unique ability to operate at the strategic level of war. The technology of the day was simply unable to fulfil all the promises of the air advocates. But what was the alternative? World War I had been a fearful slugging match – a tactical blood bath that killed millions. Was it not the duty of planners, of all officers, to seek ways to avoid such carnage in the future? Was it not their duty – is it not still our duty – to find a better answer than simply doing what we did previously?

## OBSERVATIONS

What are the overall conclusions from this brief overview of air power in joint operations?

### Air Superiority

First, air superiority is essential to the success of any major air, land, or sea operation. To quote Rommel again: 'Anyone who has to fight, even with the most modern weapons, against an enemy in complete command of the air, fights like a savage against modern European troops, under the same handicaps and with the same chances

33 Murray and Millett, *A War to be Won*, p 33.

34 Maurer, *Aviation in the U.S. Army*, pp 475–76. I would also note here that the RAF received, on average, only around 15 per cent of the British defence budget during the interwar period. Robin Higham, *Armed Forces in Peacetime*, Archon, Hamden, 1962, pp 326–27.

35 Irving B. Holley, Jr., *Buying Aircraft: Materiel Procurement for the Army Air Forces*, Government Printing Office, Washington DC, 1964, p 550.

36 Peter R. Faber, 'Interwar U.S. Army Aviation and the Air Corps Tactical School: Incubators of American Airpower', in School of Advanced Airpower Studies, *The Paths of Heaven: The Evolution of Airpower Theory*, Air University Press, Maxwell AFB, 1997, p 212.

of success'.[37] This conclusion is so obvious, to all the Services, that it scarcely seems necessary to mention it. However, three points need to be raised here. First, although everyone might agree that air superiority is necessary, they may disagree over how it should be achieved. Early in the war, surface officers wanted friendly aircraft overhead, in combat patrols, protecting them from enemy air attacks.[38] This defensive mindset was disputed by most airmen. They believed in taking the war to the enemy – of achieving air superiority over Berlin rather than over London, and over Japan rather than over the Marianas. The ultimate goal – air superiority – was the same for all, but the method of its achievement was significantly different.

Second, air superiority must be continually won, almost on a daily basis. It will be extremely difficulty to destroy totally an enemy air force or its defensive capability. There will generally be ebbs and flows. Planners must therefore be ever mindful of the need to continue counter air operations so as to prevent a resurgence in enemy air activity.

Third, and this is an observation that transcends the Second World War, air superiority has been an accepted condition for the West, especially the US, for so long, it is tempting to take it for granted. This would be dangerous. Air superiority was won in World War II the old-fashioned way: it was earned. It was earned at great costs in blood and treasure over a period of years. It has been maintained at a similarly high cost. It is not luck or fate that have made our air forces superior to our potential adversaries, it has been the billions of dollars and countless hours of training and preparation that we have expended over many decades.

**Intelligence**

The intelligence function grew dramatically in size and significance during World War II. Prior to the war, for example, the US Army did not even have a career path formally established for intelligence officers. It was usually considered an additional duty.[39] That all changed, partly due to the enormous use of wireless communication in war. This in turn generated the establishment of an organisation whose function was to intercept, decipher, and analyse the huge volume of traffic transiting the air waves at all hours of the day and night. The contribution of Ultra – the breaking of the German Enigma codes – is well-known to all of us. Another reason for the growth of intelligence organisations had to do with the nature of the information needed. The connection between air targeting and intelligence was unbreakable. Air planners had to know the exact locations, functions, weak points, and alternate uses of entire networks – electrical power, railroad, communications, munitions, etc – that had not been required previously. It took time to establish this new infrastructure, but it was time and effort well spent. Air commanders relied heavily on Ultra, as well as other

37 Liddell Hart, *The Rommel Papers*, p 285.

38 In early 1943 in North Africa, Lieutenant General Kenneth Anderson demanded that a RAF fighter group be put directly under his command to fly combat patrols overhead to keep the Luftwaffe at bay. Mark, *Aerial Interdiction in Three Wars*, p 30.

39 Carl Kaysen, *Notes on Strategic Air Intelligence in World War II (ETO)*, Rand, Santa Monica, 1953, p 30.

intelligence sources, to plan their operations at all levels.[40] It is no surprise that intelligence organisations have exploded in size and complexity since World War II. Air power and intelligence will continue to enjoy a close and essential relationship.

**Personalities**

It may not be scientific or measurable, but personalities nonetheless can have an enormous impact on joint operations. Despite logic, sincerity, common cause, and even necessity, it is remarkable how often success or failure in an operation can hinge on the personal relationships established between commanders of different components or units. When individuals trust one another and can 'get along together' the results achieved are usually greater than when commanders, regardless of how competent or intelligent, do not trust, like, or respect one another.

Lieutenant General Lewis Brereton was commander of the US Ninth Air Force in the spring of 1944. A Naval Academy graduate, he had piloted fighter, bomber and observation aircraft during his career and had served as an instructor at both ACTS and the Army's Command and General Staff College at Fort Leavenworth. During the war, Brereton had commanded large air units in the Pacific, India, North Africa and Europe. Unquestionably, he knew his job and had the rank, experience, and intellectual credentials to prove it.

Unfortunately, he was not popular with his colleagues in Europe. General Omar Bradley, whose 12th Army Group worked closely with the tactical aircraft of the Ninth Air Force on a daily basis, did not think Brereton was sincere, energetic or cooperative. General Edward Almond thought Brereton was 'taciturn almost to the point of rudeness and inclined to be too stubbornly an airman in matters pertaining to the air and ground'.[41] Even airmen, both British and American, had difficulty getting on with him. Eisenhower therefore made the decision to move Brereton out. The Ninth was too important to the success of the Normandy campaign to have an air commander in charge who could not work effectively with his colleagues. Brereton was transferred and his place was taken by Major General Hoyt Vandenberg – also a highly capable commander, staff officer and tactical pilot. 'Van' was, however, also universally liked and trusted by everyone – soldiers and airmen, Brits and Americans. It is debatable whether Vandenberg was more technically qualified than Brereton to be commander of the Ninth Air Force, but his ability to work well and effectively in a joint and indeed combined environment made him the superior choice.

Other conflicts involved the tension that existed between Montgomery and the commander of the 2nd Tactical Air Force, Air Marshal 'Mary' Coningham. Although the two had gotten along famously in North Africa, things had soured, and by D-Day the two men barely spoke to each other. Instead, Montgomery would routinely bypass Coningham by going over his head, or, worse, going under him to deal directly with Air Vice-Marshal Harry Broadhurst, one of Coningham's group commanders. This was

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40 See SRH-013, 'Ultra: History of US Strategic Air Force Europe vs. German Air Forces', June 1945.

41 Phillip S. Meilinger, *Hoyt S. Vandenberg: The Life of a General*, Indiana University Press, Bloomington, 1989, p 49. Bradley's aide, Major 'Chip' Hansen, confided in his diary that he could barely stand to be in the same room with Brereton.

not conducive to smooth joint operations. There were other such negative examples throughout the war, including the celebrated hostility between Generals Joe Stilwell and Claire Chennault in China. There were, fortunately, positive examples of commanders who worked together extremely well, such as Generals Douglas MacArthur and George Kenney, Eisenhower and Tedder, and Generals George Patton and 'Opie' Weyland, commander of the XIX Tactical Air Command.[42] Recall that in the drive across France, Patton asked Weyland's XIX TAC to serve as his right flank. A theatre commander is wise to select component commanders who are compatible with one another and who are committed to working together effectively. One of Eisenhower's great strengths was his ability to forge a successful team from a group that included strong personalities from various Services and countries. It would appear this issue was just as important in the Persian Gulf War and Yugoslavia as it was in World War II.

**Command and Control**

'Centralised control of air assets' has been a catch phrase for airmen since World War I. For reasons doctrinal, theoretical, administrative, bureaucratic, and even parochial, this idea has been a frequent source of argument between airmen and surface officers. Army doctrine going into the Second World War tended away from centralised control; instead, ground officers were assigned air assets for their use. In North Africa, airmen and soldiers both found this system wanting. As a result, the British and the Americans rewrote their doctrine manuals to reflect more closely the airmen's views. The fact that noted soldiers like Bernard Montgomery supported this trend was certainly welcome. In 1943 he wrote:

> Nothing could be more fatal to successful results than to dissipate the air resources into small packets placed under command of army formation commanders, with each packet working on its own plan. The soldier must not expect, or wish, to exercise direct command over air striking forces.[43]

This belief was echoed in the Army Air Force (AAF). To illustrate how much things had changed, the words of Army Chief of Staff General Malin Craig in 1938 are significant: 'It alone [infantry] can win a decision. Each of the other arms is but an auxiliary – its utility measured by the aid that it can bring to the Infantry.'[44] In contrast, a new doctrine manual, FM 100-20, was released in mid-1943, soon after the lessons learned in TORCH. It proclaimed in bold type that land power and air power were co-equal and interdependent, neither being the auxiliary of the other. It went on to state that a theatre air commander should be appointed by the supreme commander to exercise command over all air units in the theatre.[45] In reality, this doctrine was not always followed. In north-west Europe, for example, Eisenhower had an air deputy, Air

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42 For two excellent books exploring this subject, see Dominick Graham and Shelford Bidwell, *Coalitions, Politicians and Generals: Some Aspects of Command in Two World Wars*, Brassey's, London, 1993; and D. Clayton James, *A Time for Giants: Politics of the American High Command in World War II*, Franklin Watts, New York, 1987.

43 General Bernard Montgomery, 'Some Notes on High Command in War', September 1943.

44 John F. Kreis (Ed), *Piercing the Fog: Intelligence and the Army Air Forces Operations in World War II*, Air Force History and Museums Program, Washington DC, 1996, p 37.

45 War Department FM 10-20, 'Command and Employment of Air Power', 21 July 1943, pp 1–2.

Chief Marshal Leigh-Mallory, who controlled tactical air forces, but who had little control over the strategic air forces. To help solve this problem, Eisenhower appointed as his chief deputy Air Chief Marshal Arthur Tedder, a highly respected officer who was better able to coordinate the efforts of the tactical and strategic air forces than was Leigh-Mallory. Even so, there were problems. The Ninth Air Force reported to the Eighth Air Force for administrative matters, and the Ninth's commander, though nominally equal to the 12th Army Group commander, was of lesser rank.

In his after-action report in 1946, the Ninth's commander, Lieutenant General Hoyt Vandenberg, argued forcefully against a decentralised control of air assets that would cause waste, inefficiency, and sub-optimum combat results: 'It is recommended that the equality and interdependence of air and ground forces be maintained as inviolable military policy, that direct control of all available air power be centralised under the air force commander and that the air force commander be responsible for operations directly to the Supreme Commander'.[46] I would note here that this sounds remarkably like the modern Joint Force Air Component Commander (JFACC) concept. However, it took 40 years and two major wars for the US to adopt the JFACC model in its joint doctrine.

One aspect of this command and control issue was the necessity of joint planning. Once again, the Ninth Air Force's experience was important – and I would note that the Ninth, which was responsible for providing air assets to the entire 12th Army Group, was the largest tactical air unit in history with nearly 180,000 personnel and over 4,000 aircraft. So it speaks with authority on the subject of tactical air power in joint operations. The Ninth insisted that air and ground headquarters be collocated and that all planning had to be conducted jointly, 'on a hourly or minute-by-minute basis if necessary'.[47] Failure to maintain such close coordination could be disastrous. At Cherbourg on 22 June 1944, for example, 25 of the Ninth's fighter-bombers were lost due to inadequate planning and a lack of understanding between the air and ground forces involved regarding the correct procedures to be followed.[48]

An interesting facet to the issue of joint planning regarded staff composition. Airmen advocated separate but equal staffs working in close proximity and maintaining close liaison. Ground officers, on the other hand, argued for a single, joint staff to ease planning difficulties and smooth coordination. The airmen believed that so-called joint staffs were often really ground staffs with a few token airmen thrown in for show; whereas, ground officers saw a separate air staff as duplicative and inefficient. This debate is still with us.

## Air Interdiction

Air interdiction is one of the most effective uses of air power in a joint environment. I've already discussed the importance of air interdiction to operations in North Africa and Europe during World War II, but will make some additional comments. There are many factors that will spell success or failure for air interdiction: good intelligence,

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46 *Condensed Analysis of the Ninth Air Force in the European Theater of Operations 1946* (Reprinted by the Office of Air Force History in 1984), p 94.

47 *ibid*, p 105.

48 *ibid*, p 24.

sustained pressure, symbiotic ground and air operations, high consumption, weather, terrain, etc. In addition, planners must think through whether it is more advantageous to limit an enemy's mobility, his reinforcements, or his supplies. Which of these is chosen will to a large extent determine the targets, tactics, and timing of air strikes. If, for example, the goal is to limit mobility, then bridges or other choke points close to the battlefield should be struck just prior to suspected enemy movement. This will reduce the enemy's options and flexibility. If, on the other hand, the goal is reduction of supplies, than a fuel depot farther back from the front would have a greater, albeit more long-term, effect. The goal is to always keep the adversary off balance and to continually fail to meet his expectations.

## CONCLUSION

Let me close by reiterating my opening comments regarding the importance of jointness: joint thinking, joint planning, and joint understanding. Certainly, as an airman I believe strongly in the utility of our chosen weapon. At the same time, however, I recognise that every form of power, every Service, has strengths and weaknesses. We must understand each other in order to effectively plan and fight our wars, before they occur. The allies had to learn the complexities of joint operations during war. We no longer can afford that luxury.

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## *DISCUSSION*

*Unfortunately, due to circumstances outside the control of the publisher, the discussion period following Colonel Meilinger's presentation was unavailable for publishing.*

# THE EVOLUTION OF THE JOINT FORCE SINCE 1945

PROFESSOR JOHN R. BALLARD

## INTRODUCTION

The opportunity to think critically about the development of the Joint Force since 1945 was exciting to me because I have been teaching Joint Operations for most of the past decade and I had not considered how its development might illuminate current practice. What I have discovered is both eye-opening and perhaps sobering. The development of the Joint Force has been influenced strongly by physical factors – principally geography and technology, but I believe it has also become commonplace today for a much more important reason. The cost of modern combat in both financial and human terms has staggered national capabilities in an era of significant change. As a consequence, warfare among developed nations has been driven towards manoeuvre and asymmetrical approaches that seek to minimise casualties. Often, joint solutions provide the most reliable methods to meet those requirements.

Jointness truly reached an employment peak with the techniques needed to end the Second World War. Given the geographic hurdles of invading fortress Europe and the remnants of the Japanese Empire, only large air-land-sea task forces could meet the force requirement. Eisenhower summed up his commonsense judgment after four long years of war by saying, 'Separate ground, sea, and air warfare is gone forever. If ever again we should be involved in a war, we will fight it in all elements with all services as one single concentrated effort.' He hoped, and may have believed, that warfare had become too terrible to continue; he expected that multi-dimensional teamwork had so proven itself that it would be the simple norm in the future. He was wrong on both counts.

## THE NATURE OF WAR, POST–1945

War did not cease with the peace treaties, it only changed its form and location. The roots of many a late twentieth century conflict took shape in the aftermath of the World War. More interesting for this conference, joint approaches suffered serious setbacks in the immediate postwar period, an era dominated in the US by Service competition for resources, fear of another global conflict and a tendency to focus primarily on atomic responses. Massive reductions in force structure permitted individual Services to retreat into near isolation from joint approaches. Although the unified command structure so important during the war was retained in the US, the commanders-in-chief were severely hobbled by Service Chief restrictions on their authorities.

Since 1945 warfare has pushed all spatial boundaries. Weapons systems have improved to go higher into the stratosphere and deeper into the blackness of the oceans. Bombers can now operate over 50,000 feet in the air and submarines below

300 metres in depth. As systems extended their vertical span of employment they have also improved in speed and in horizontal range. Douhet's dream of home-based bombers roaming the world to engage targets is now a real capability. Not only do bombers have much greater operational legs they are much faster as well. The trusty B-17 could reach out over 1800 miles at only 300 miles per hour, the B-1 has virtually unlimited range at four and one half times that speed (about 1400 mph). In the same way, ships and other weapons systems have greatly improved in performance. Tanks in 1945 could only hope to reach speeds of 24 kilometres per hour and their descendants today operate at nearly three times that (66 kph).

Technology has shaped warfare. Satellites, aircraft and submarines are even more significant influences on warfare today than anyone dreamed in 1945 – particularly with the advent of the cruise missile. Extending spatial boundaries has had important warfighting implications. Greater range, ceiling, speed and depth have provided the opportunity to outflank opposing forces like never before. Greater speed gives at least the chance of closing within the operating distances of the enemy to strike him first or more significantly, in an unexpected manner. We manoeuvre today not just in spatial terms, but also in thinking terms – attempting to remain ahead of the enemy commander's decision-making capability. In their infancy, these capabilities got us across fatal trench lines in the First World War and at maturity through geographic barriers in the Second. Since 1945 we have extended them even farther in a continuous effort to stay out of the tactical 'beaten zone'. By avoiding the lethal fires of an opponent and by attacking from distances and locations that provide refuge for our forces we have sought to resolve conflicts with minimal loss of life.

Unfortunately, for all this progress there has been an even greater cost, and I mean that in not only Service fiscal terms but also national budgetary terms. The B-17 cost about $275,00 in 1945; today the B-1 costs well over $200 million and the B-2 makes me wince at $1.3 billion.[1] I don't know how much a Sherman tank cost in the 1940s, but we were able to build over 50,000 of them. Today the M1A1 costs $2.6 million per tank and almost as much to run every hour! True, these are weapons of pinpoint accuracy and astoundingly massive destruction capability. We are all well familiar with the accuracy and killing power of today's weapons, but can we balance that against their cost? Honestly, in terms of lethality we have reached such precision and power that we may have literally out-priced ourselves given most current threats. How much did Operation ALLIED FORCE cost NATO in purely fiscal terms (not counting the cost of an F-117 at $45 million per aircraft)? What did precision guided missiles mean in Somalia and Rwanda, and what do they mean today in East Timor and Sierra Leone?[2]

I believe that this remarkable increase in operational capabilities, lethality and cost has led quite directly to a strident move away from attrition solutions and towards operational level indirect or asymmetrical attacks. Such attacks are the sweet spot for joint operations, for only joint capabilities offer the combination of tools needed to

1 Our nuclear powered submarines currently under construction are priced at $2.1 billion.

2 Human intelligence and trucks were much more useful in these conflicts.

execute modern precision attacks over a concerted period.[3] Joint operations focus combat power across geographic dimensions (air, land and sea) in such a way as to prevent seams, which can be attacked by the enemy, yet still permit the type of decentralised execution needed to maximise Service doctrines and tactical procedures. The fits and starts of joint warfighting since 1945 are often unclear, but they show this fact quite well.

## THE TECHNIQUES FALL FROM FAVOUR

A shocking exception to Eisenhower's expected trends of peace and jointness gripped commanders in June 1950 when the North Korean Army invaded South Korea. This turned out to be a real war in an unexpected place and with surprisingly deadly impact. The ill-prepared South Korean Army and the under-trained US occupation forces from Japan were rolled up by the In Min Gun in its stunning drive south to a precarious foothold around Pusan. General MacArthur, the theatre commander, had initially underestimated the North Koreans. But he was the last of the truly experienced operational commanders of the previous war and he understood the synergy of joint forces – particularly given his ability to dominate exterior lines with vastly superior air and naval forces. The North Koreans had no naval power and their small air force was dusted away early in the conflict. While his Army commander, Lieutenant General Walton 'Bulldog' Walker, hung on desperately in the South, and his air commander, General George Stratemeyer, employed fast new jets and veteran bombers to shape the fighting, MacArthur marshalled a joint task force to strike the North Korean line of supply deep in its rear at the critical hub of power that was Seoul. He could do so nearly with impunity.

Operation CHROMITE was a stunning success, including at a single stroke the great majority of our current tenets of joint operational art. Joint boards, component commanders, decentralised operations, flexible boundaries for joint fires, synchronisation of air, land and sea – all of these techniques were used to effect. Not a hammer and anvil operation, but truly a counterstroke designed to shatter the cohesiveness of the enemy force and end the war. It worked. Unfortunately, its success was its own and its great commander's undoing. MacArthur was soon relieved and surprisingly the conflict in Korea was transformed into a stalemate of First World War proportions! General Ridgway, MacArthur's successor, directed extremely broad, attrition-based warfare in 1951 that has been compared to Ulysses S. Grant's attack on Richmond in 1865, but was less successful. Why?

I offer several factors. The first was fear of starting an atomic world war. Second was a lack of operational perspective among the most senior commanders of that day. In five short years the limited number of real operational level thinkers had passed from the scene and a new generation of much younger, still very tactical thinkers took charge.[4]

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3 At least in the United States, no single Service can provide all the linkages that start with reconnaissance and continue quickly to intelligence, strategic deployment, local protection and sustainment, deception, precision engagement, recovery and assessment.

4 In my view, even Corps commanders in World War II fought tactical engagements with little responsibility for overall operational insight. They were after all still two or three echelons of command below the theatre commander. The same is true for all but a very few naval and air

Third, and even more damning, was a terrible lack of trust among these senior commanders, who had suffered more and more recently as opponents in the budget wars in Washington than they had as members of the joint team in conflict. The trust was not sufficiently enduring and the tactical nature of a war with two very closely engaged armies forfeited the United Nations' force's advantages in technology. We found victory in a political sense, but are still facing off there today.

Elsewhere during the same period there **were** continuing vestiges of jointness, but they made relatively little impact. Encouraged by Earl Mountbatten of Burma, another sage veteran of joint operations during the World War, the British continued joint procedures in a series of small crises. The commander in Malaya, General Sir Gerald Templer, successfully integrated Gurkha, SAS and Royal Marine ground operations with Royal Navy support and fledgling RAF heliborne capabilities early in the decade. Operations in Kenya and Cyprus employed multiple Service assets but only minutely reached levels of synergy due to the physical environment and tactical nature of operations. Later, in Aden however, General Sir Charles Harrington, as Commander-in-Chief Middle East exercised command through three Service component commanders collocated with his own joint staff. Even though operations there remained below brigade size, all Services cooperated well, employing naval task groups and sound close air support procedures, and achieved some success, given the difficult cultural circumstances behind the crisis. Also, in the mid-1960s, the Commander-in-Chief Far East, Admiral Sir Varyl Begg, exercised full authority over Army and RAF forces as well as the Royal Navy in Borneo, and conducted highly successful operations through a land component commander, who for most of the period was Major General Walter Walker. General Walker even used something of a joint staff in Brunei, although the nature of his operations made for limited air and naval contributions and the bulk of planning and execution remained with the Army and Royal Marines.[5]

French efforts over the same period were often joint but inordinately less successful. The French Indochina war began even as the World War ended, and by 1946 all three French Services and thousands of colonial troops were fully engaged in an attempt to reassert control there. By 1949 in fact over 150,000 Frenchmen were operating in the region under Commander-in-Chief General de Lattre de Tassigny. Over the succeeding two years, the French remained innovative in joint operations, fully employing amphibious and airmobile operations techniques and pioneering the use of mobile groups in the difficult terrain. Generals Salan and Navarre continued unified command and joint operations of increasing scope until Operation CASTOR in 1954 resulted in the defeat at Dien Bien Phu. This war showed that even technology backed by joint techniques could not defeat a ruthless opponent when you chose to fight him on his own terms.[6]

officers commanding the largest of formations in direct support of people like Nimitz, MacArthur, and Slim.

5 In all of these operations the degree of civil police control and intelligence integrated within the military system was extensive and worth study. See Michael Carver's *War Since 1945*, Putnam's, New York, 1981, particularly part one.

6 See Bernard Fall's classic *Street Without Joy*, Pall Mall, London, 1964.

The long French war in Algeria on the other hand rarely demonstrated joint employment or techniques. In part this was due to the geography of Algeria but the stranglehold of the Army over operations there must also be seen as a major inhibitor of joint approaches. In fact, it was only with the appointment of Air Force General Maurice Challe in 1959 that the tactics in that war changed significantly. He added amphibious strikes and improved the effectiveness of air-ground operations in Algeria.[7] Why did the French employ solid joint approaches in Indochina, yet show a reluctance to do the same in Algeria? I can only see an army-centric mindset focused on tactical solutions to fault.

An even greater mystery exists concerning the American operations in Vietnam, which began in earnest in 1965, even as the British and French overseas expeditions were winding down. Operation POWER PACK, the US intervention in the Dominican Republic in 1965 had significant joint elements, yet at the same time in Vietnam the US had, but did not fully employ, unified (joint) command structures, eventually leaving operational decisions to a decidedly army-centric Military Assistance Command Vietnam (MACV) under General Westmoreland.[8] Although the original American intention was to act indirectly, by simply aiding the South Vietnamese forces, the MACV strategy quickly became one of American and allied units actively prosecuting the war. Air power, and in lesser importance sea power, were restrained from maximum effect for political reasons, establishing a battlefield which did not sufficiently leverage technological or joint advantages. Like the French fourteen years before them, the Americans in 1968 fought a conventional battle with North Vietnamese forces.[9] They won the battle, and lost the war.[10] Only afterwards was the full effect of modern air power superiority unleashed and only too late was its effect recognised. Operations LINEBACKER I and LINEBACKER II in 1972 amply demonstrated the advantages of air and naval fires, as the US and her allies were leaving Vietnam.

Several other nations fought some significant campaigns during this period. Certainly the wars on the Indian subcontinent and the early Arab-Israeli conflicts, including the Suez Crisis in 1956,[11] were important, as were revolutionary conflicts in Cambodia, Bolivia and a host of other locations. But none of them had a significant joint component. Due to limited force structures and training levels, most also remained primarily ground-to-ground conflicts. Interestingly, few of them were very decisive.

What we have then up to 1970 were joint structures remaining as legacies of the Second World War, which were employed as such in an increasingly irregular and inconsistent fashion. When legendary figures such as MacArthur, Mountbatten and de

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7 Carver, *War Since 1945*, pp 140–141.

8 General Westmoreland did have officers of all Services on his staff and did employ Army and Marine forces, but he did not have real command authority over the naval and air force forces which were really needed to take control of the war at the operational level.

9 There were some unconventional exceptions, among which must figure US Marine efforts to employ a civil-action program.

10 I am indebted to Colonel Harry Summers for his insightful critique of US operations in Vietnam contained in his book *On Strategy: A Critical Analysis of the Vietnam War*, Presidio Press, Novato CA, 1995.

11 In its command structures Suez had joint elements, but it was politically restricted, diplomatically segmented, and was cut short before it could demonstrate any operational effect.

Lattre passed from command, and with the spectre of global nuclear war overhead, the trend was a slow but clear reduction in joint teamwork. As the Cold War drew on, full employment of the joint team became increasingly rare. In some respects, operational art also passed out of the lexicon. In the mist of a very uncertain period one can see some indications of a desire for indirect approaches, yet all too often, even though the opponent was always an infantry-based ground force, commanders seemed to favour similar approaches and find significant losses.

## THE TIDE RETURNS

The late 1960s witnessed both the climax of the American experience in Vietnam and the beginning of a joint renaissance. The rebirth began to take shape in some unexpected places. First, the Israelis planned and executed their 1967 war with the full employment of all three Services in mind. Under the leadership of Defence Minister Moshe Dayan, the Israeli Air Force stole a march on the Egyptian forces along the Suez, destroying the enemy air force on the ground and securing the time necessary for naval and ground forces to meet their opponents on favourable terms. This was a victory in a war of high technology and much new equipment including surface-to-air missiles. Then, during the 1971 Indo-Pakistani conflict, the Indians, led by Army chief General Sam Maneckshaw, brought together significant air and naval power to seal off and dominate the smaller Pakistani force in the east. Although the terrain inside the Bangladeshi region favoured the defence, the Indians maximised use of their forces, including carrier air power from the INS VIKRANT, to dictate the contest and win a significant victory in only three weeks. Both of these campaigns employed joint forces against technologically equal opponents and obtained striking results due to well-timed and synchronised operational manoeuvre. The 1967 war got everyone's attention, including the Egyptians who found defeat to be an excellent teacher.[12] In 1973, they turned the tables on the Israelis with effective use of air defence and air manoeuvre in the face of a static defence tactic – the Bar-Lev line. Only at the last moment did the Israelis return to a joint manoeuvre concept – General Sharon's bold counterattack, which thankfully re-established a basis for a cessation of hostilities between the two overextended forces.[13]

With these victories in mind, a renewed interest in joint procedures and in operational art dominated military mindsets in the mid-1970s. The US AirLand battle doctrine was in the works[14] and people like Generals William DePuy and Don Starry were already reforming the US Army after its Vietnam experience.[15] Still, three signal defeats were

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12 Martin van Creveld pointed out that the loss of some 3,000 tanks in three short weeks heralded an end to any concept of warfare being decided on the cheap. See his *Washington Paper No 24*, 'Military Lessons of the Yom Kippur War, Historical Perspective', SAGE, London, 1975, p 6.

13 The 1973 war resulted in the destruction of 3,000 tanks – a bad omen for the cost of future conflicts!

14 The first edition of Field Manual 100-5, which resurrected operational art, was issued in 1982.

15 'While seeking solutions to the problems noted during the war in Southeast Asia, DePuy and the TRADOC staff were heavily influenced by the Israeli War of 1973. Initially DePuy had defined his command's mission as training the Army to win on the modern battlefield of the next war. After the October War, the definition was refined to include winning the first battle of the next war.' From the *History of the US Army's Training and Doctrine Command.*

to occur before the US armed forces returned to a joint perspective. The botched 1975 Mayaguez rescue, and the failed 1980 Iranian hostage raid (Operation EAGLE CLAW) demonstrated a serious lack of information-sharing and understanding of tactics, techniques and procedures among members of the four Services. Yet, it was the somewhat successful Grenada operation in 1983 (URGENT FURY) that really broke the back of Service parochialism in the United States, (although only after strident Congressional direction forced the issue). On that small Caribbean island, in the face of less than 100 opponents, our four Services completely failed to coordinate at the operational level (where, I might add, command and control was nearly non-existent), failed to share intelligence, and suffered severe interoperability problems in tactical execution.

The problems in Grenada occurred only months after the Falklands War had demonstrated so many lessons about joint operations to the world. A great weakness in the Argentine position had been their lack of joint planning and coordination in the face of an unexpected British opposition to Operation ROSARIO. Had the Argentines read their history and placed modern aircraft in Port Stanley, Admiral Sandy Woodward's task group would have been hard pressed to successfully counterattack. Had they understood the synergy of joint operations and integrated naval manoeuvre into coordinated air and surface strikes on Woodward's force, the Argentines probably would have won in the face of the tremendous logistics challenges presented to the British force. The British on the other hand integrated nearly every tool in the kit bag to mount their operation rapidly and win at the knife's edge of culmination (logistically, and operationally).

By 1985 many authors were researching and writing about joint operations and operational art. In 1986, the US Congress passed the Goldwater-Nichols Department of Defense Reorganization Act, which did not reorganise anything in the Pentagon, but empowered the Chairman of the Joint Chiefs and **made** the Services work together. Admiral Bill Crowe was the first CJCS to experience freedom from decision by committee and his successor General Colin Powell wielded the most powerful influence of any chairman since General George C. Marshall's de facto role in the Second World War.[16]

After a practice run in the 1989 operation in Panama (JUST CAUSE), the new emphasis on joint operations began to flower under General Norman Schwarzkopf, who had, after all, been the deputy commander in Grenada. Operation DESERT STORM easily fits my definition for joint force operations, but I must say it was still overly controlled and fraught with Service competition. The MacArthuresque turning movement in the desert did not fully integrate component capabilities nor did the CENTCOM staff permit truly decentralised operations. Even so, a resounding manoeuvre effect on the entire breadth and depth of the enemy force was produced. In particular for this audience, air power was used as a manoeuvre element in the first phase of operations to shape the full battlespace and set conditions for decisive combat. And later, in phases two and three of the campaign, General Chuck Horner's air

[16] Fleet Admiral William Leahy was really the chief of the American Service Chief's but it was Marshall, as the Army Chief, who orchestrated and masterminded the military war effort.

component was a nearly equal member of the team.[17] Unfortunately, the ground and naval commanders did not understand how powerfully air power among the sparkling array of new technologies would affect the battle and were not prepared to take full advantage of the opportunities it presented. Still, we should remember that CENTCOM did not fight against a joint force and we did not complete the manoeuvre effect. (I won't discuss conflict termination.)

Since 1990, joint operations have returned to hold a position as a standard bearer in the developed world. The United States, Great Britain and their allies have employed joint task forces in Northern Iraq, Somalia, Haiti, Rwanda, and Kosovo.[18] In the first few of these we used joint approaches but still became embroiled in the tactical problems that were more the domain of our opponents. Operation PROVIDE COMFORT in Northern Iraq was successful, but RESTORE HOPE in Somalia grew out of control and ended in another American wake-up call. We adjusted our approaches, refined our techniques and produced a series of more successful operations. UPHOLD DEMOCRACY in Haiti was truly joint, even when it could have been simply Army or Marine. Operation DESERT FOX, back in Iraq, brought a virtual coalition together behind a joint team for a truly asymmetrical effect. Range, speed and precision again proved invaluable.[19]

Perhaps the most illustrative of recent examples have been the two most current. In Operation ALLIED FORCE air power dominated, but all components of the alliance force were part of the team effort (even if we learned nearly too late to include the ground component in operations). Generals Clark, Jackson and Short had to walk demanding tightropes among diplomatic, political and military requirements, but the end result was clear. The alliance successfully achieved a political and security objective while shielding its forces and friendly civilians from the brunt of the fighting. Even though most saw ALLIED FORCE as a primarily air effort, we employed several multinational joint task forces to handle subordinate missions of security and resettlement that were required for the desired end-state, and coordinated the actions of all with great effect. One need only watch the functioning of the Combined (and Joint) Air Operations Centre in Vicenza to see how asymmetrical and synergistic joint operations can be executed.

With Operation STABILISE it was our Australian partners that provided leadership and the insight to make a difficult operation at best stay distant from what could have been a much more serious warfighting conflict, yet still resolve the fundamental problem. General Cosgrove successfully integrated not only all the Service tools, but also the perspectives of many nations and the United Nations in a very short time and retained the initiative throughout his operations. Technology was important but did not dominate operations. The use of force was measured and the scheme of manoeuvre was

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17 General Schwarzkopf retained the role of ground component commander in his deputy after the departure of the Third Army Commanding General. This made it difficult for any other component to get a truly equal hearing before the CINC.

18 The decision not employ a joint task force in Bosnia remains controversial, but given the mission and its expected duration, Service component command may have been the only appropriate option.

19 We must also consider the role of Operation INFINITE REACH in the Sudan and Afghanistan in 1998 where joint forces struck terrorist targets instead of national military objectives. Did we only widen the battlespace again by this act?

right for the mission. East Timor may in fact be the most successful operation of the past decade.

Structural changes have also been made to reflect the increasing value given joint operations. The United Kingdom has developed a permanent joint headquarters and joint force headquarters structure as well as a series of purple exercises and a joint staff college. The French have grown a joint headquarters planning staff out of the old *Force d'Action Rapide* concept and recast a new *college interarmées de defense.* Canada fully integrated, and stepped back, but remains joint-focused. The United States has evolved a Joint Forces Command to manage joint doctrine, training and future force development. Australia has demonstrated the value of its new joint command structure as the leader of the United Nation's coalition force in East Timor. Today Brigadier Martin Dunne is presenting a joint force headquarters concept to the Chief of the Defence Staff in Wellington. Since 1991, the term 'joint' has been used so frequently around the world to gain support for concepts and constructs, that it has almost become trite.

## THE JOINT FORCE TODAY

So what have we really learned about joint force employment? First of all, it won't work if you don't work at it. Joint force operations are based more than we want to admit on **trust**, but trust under the most demanding of conditions. To instil that kind of confidence most nations have developed permanent joint staffs, a rigorous series of joint exercises and joint education programs to imbue a set of joint values, attitudes and perspectives within the force. Joint doctrines and procedures are important, but teamwork requires more. Joint planning and centralised control are also important to synergistic operations. Military professionals must first be absolutely grounded in their Service core competencies before they can fully optimise the tools of the joint force. Every good team needs a firm coach and a solid playbook, not just star players to win. Joint employment is an inherently operational construct – it is difficult to learn and even more challenging to use; yet, most of our commanders today only get one shot at it.

Around the world today we have joint forces employed in Eastern Europe, South-West Asia and South-East Asia. We have standing joint forces in North-East Asia. The Russians are certainly using all of their tools in Chechnya.[20] We have developed joint intelligence centres and extended our joint concepts as a model for alliance, coalition and multinational operations, witness NATO's CJTF concept. First in Northern Iraq, then in Somalia, where we learned many painful lessons, later in Kosovo and now in East Timor, we have seen that modern operations require flexible, interoperable, multi-dimension force packages. Joint staffs and commanders with operational command authority are necessary to make such complex organisations work well. Technology can affect warfare, but commanders well versed in the operational art can **dominate** it.

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20 Even in World War II the Russian Front organisations were quite joint and the service functions still seem to be well coordinated in the current fight.

Finally, I must propose that modern joint operations have continued to emphasise ways of defeating the enemy at a distance, indirectly and in recent years most innovatively through psychological and informational effects. These last two venues will illuminate the path of future joint operations. As we focus more on affecting the decision-making of the opposing commander we can better accomplish our objectives and protect our most precious resources. We will certainly continue to avoid attritionist, tactical solutions in all but cases of vital national interest because their cost in human and economic terms has become unsupportable. Yet, we know that all warfare in its ultimate form must accommodate loss, death and destruction. The joint force provides multi-dimensional capability; against a single dimensional opponent (Giap, Aideed, Saddam, Milosevic) it offers tremendous flexibility and opportunity, but it has not always been successful and is not today a panacea. We are now extremely worried about asymmetrical attacks against our own critical infrastructure and we must be very aware that neither technology, nor command structures and training are a replacement for an appreciation of the military art that has been passed down to us from Sun Tzu through a succession of winning leaders.

It was Sun Tzu who said: 'We can form a single united body, while the enemy must split up into fractions. Hence there will be a whole pitted against separate parts, which means that we shall be many to the enemy's few.'

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## *DISCUSSION*

*Wing Commander Despina Tramoundanis (RAAF):* We've heard a fair bit about the need for trust in joint operations. It strikes me though that the one battlefield where trust seems to fail is the battlefield we engage in back at headquarters, over roles and missions and budgets. I wonder if you would care to comment?

*Professor Ballard:* I would, thank you. Honestly, I don't think that's a bad thing. I think that Service Chiefs get paid to defend their Services in budget wars. That's probably good, because it produces different opinions, different approaches, innovations, new ideas. In our capitals we can and should disagree. They're gentlemen – I am sure they have dinner together, you know – but when it comes down to spreading out the Australian dollar they are going to fight to every last tooth and nail they possibly can. I think that's OK. I also think that the moment they leave Canberra, or Washington or London, they should become part of the joint team. And I think you can do both, just as you switch different roles and responsibilities throughout a military career – I think you can, and I think you should. I'd love to hear from some of the Army officers on this, or any Marine.

*Group Captain Steve Walker (RAAF):* Since morning tea we have had a major power, if not a super power, perspective and I wonder if you could give us your view on the difference, if any, which small and medium powers face in joint operations. And if you

think there are no differences, could you perhaps address the question of future coalition operations and the need for interoperability by small and medium powers?

*Professor Ballard:* Yes, thank you. I must admit to you that since I've been living in New Zealand I've learned a lot about small nation military capabilities, and I'll tell you I have been pleasantly surprised. I never recognised the level of interoperability that really exists in some of the other defence forces around the world. I don't know if you know this but the Air Force aircraft that deploy aboard New Zealand ships are maintained in Navy hangars by Air Force personnel, in Auckland. They have a pretty darned solid interoperability concept at the bottom level. They work well together. I think you saw that in Suwai and various places in East Timor, and certainly you've seen that with your own forces. Where it has come apart in some small nations, I think, is towards the top of the spectrum, simply because without adequate opportunities to exercise and train at higher level operations, and by that I mean brigade, division and naval battlegroup-sized operations, it's very difficult to practice some of thee tools that are really important to developing the operational synergy that I talk a lot about. So, I think a small force can still accomplish a great deal of joint interoperability. I think, however, it needs to be placed in a perspective of other forces to really develop its officers through the most senior grades, and its staffs in particular. I am a big critic of big high strategic level staffs. Most of them have little or no real warfighting capability, and it's not because they aren't staffed with great people, it's because they don't get enough practice at it.

Now, the second part of your question is in one way an answer to the first, and that is I really believe that operations like STABILISE in East Timor are going to set a new standard for the cooperation in multinational forces of a variety of smaller nations or even big nations, like mine, who commit smaller contingents to the force. We are seeing more and more operations around the world. My armed forces [ie the US] are sending for the first time ever a Reserve division – a National Guard Division – to Bosnia. We have run out of active forces structure and until we turn down the frequency of some of these operations, we are all going to be sending smaller contingents to these multinational efforts. I think, in general, the tendencies and the practices of joint operations fit well into multinational. There are, of course, the national perspectives that make it more complex and more difficult. Here again, East Timor I think was an excellent, excellent example of how you can put together a regionally focused, multinational contingent – thank God the Ghurkhas were here on an exercise beforehand – but put all that together quickly and effectively to meet an operational requirement.

*Air Commodore Julie Hammer (RAAF):* Could I invite one of our Army or Navy officers who are with us here to rise to Professor Ballard's challenge?

*Professor John Ballard:* We also have a wonderful display of our international officers here, and most of them are from other Services, so I think that's great. I mean looking around the room we have got a lot of our multinational contingent here from other Services.

*Major General Simon Willis (Army):* My question relates to interoperability as you have just mentioned, and the way militaries are changing now individually, and also the high-tech nature of individual militaries, particularly the United States at the top end. Force structure and the ability of forces to come together in conflict when they are

really quite separate at their technological levels can create problems. Have you any comment to make about interoperability in relation to IT please?

*Professor Ballard:* You have clearly pointed out a big problem that is growing as we speak. In the United States, for several years now we have been talking about the RMA, the revolution in military affairs. I'm not sure what the revolution really is – I don't think anybody is – but clearly what's happening is that IT and information systems are moving at such a quick pace that we cannot keep up, no-one can keep up. The stratification of different national forces is growing and is really a concern. It's a concern across the world, and I don't really know how we're going to get at it. There was a good discussion just last week about what happens to the Australia-New Zealand defence relationship as Australia downsizes and New Zealand downsizes and shifts simultaneously. There are going to be gaps, there're going to appear over time, it's almost natural that it's going to happen, and I think that's a good example. We have to be really concerned about this. We have to look at what total capability is required to do various types of operations at low, mid and high intensity, and we really have to look almost from a battle rostering perspective, in my view, of what nations are inclined to act in those types of operations, what their capabilities are and then to look almost – dare I say it, the globalisation spectre is raising it's head – at how we might put together regional responses to these sorts of things. It's not going to be the UN that's going to do that in my eyes. It is going to be Five Power Defence Arrangement type relationships in an area of the world that are focused on specific problems with specific forces that really need to look at that problem. I don't have a solution, but I recognise it's importance.

*Air Marshal Ray Funnell (RAAF Ret'd):* Just continuing with that and looking at combined operations in particular, and the huge differences now between the world's sole superpower and everyone else. It seemed that in both the Gulf War and in Kosovo, while a coalition was necessary politically, from the operational point of view for both ease of planning and execution, the US could have done it itself. But now, of course, politically it just cannot. But what does that mean for small nations like New Zealand and Australia in attempts to remain interoperable, because they'll be needed for the force for political reasons, when they just don't have the wherewithal to maintain that operability during this period of the so-called RMA.

*Professor Ballard:* Yes sir, again, an excellent issue. We are trying from the US perspective to address that by our exercise and engagement plans that we have developed, because we do think that the only way to maintain these capabilities in an interoperable fashion is to work together, to train together and to share ideas. JWID (the Joint Worldwide Interoperability Demonstration) for example, that many people in this room are probably involved with, is more than anything else an attempt to get people to remain engaged and talking and wrestling with these issues. I think that as our budgets go down and as the cost of weapons systems goes up we are going to have to change how we wrestle with interoperability. We are going to stop doing it from an opportunity, 'come as who you can' type perspective, and start to get much more focused about how we can draw together multinational force packages. There are a lot of occasions where the United States is not going to be the lead, nor should they be the lead. There are going to be occasions where there's no clear national lead possible in a crisis. In Sierra Leone for example, right now, the British appear to be the most

committed. Why? It's hard to say. How that's going to turn out is hard to say. It's a very difficult area of the world to look at this problem because of the huge gaps in the forces there. Again, I don't have a good solution for this but I do recognise it's importance and I think, perhaps if there is an option here, it truly is the building of more multinational defence relationships that appear to me to be growing much more strongly in this area of the world than in some other locations. NATO after all was a lot more than a defensive alliance. It provided a tremendous amount of added advantages because of its ability to bring together different national ideas in a focused manner, and I think we need to look for other venues to do that.

*Dr Richard Brabin-Smith (Chief Defence Scientist):* While you were giving your address I found myself speculating on what the factors are that have appeared to propel some nations more quickly towards jointness than others, and I speak from the perspective that jointness is the obvious way to go. So let me first fly the flag a little bit for Australia. For something like the past 15 years, our Defence Act has been quite unequivocal; 'the Chief of the Defence Force commands the Defence Force', virtually as black and white as that with no equivocation. I suspect that that has, in Australia's case, moved us more quickly than otherwise we would have done towards taking a joint perspective on operations and the force structure. So Professor, my question of you is would you like to speculate on those structural factors or those cultural factors which have moved some nations more quickly in what I regard as the right direction?

*Professor Ballard:* I would, but I'd start out though by saying, interestingly enough, our Chairman doesn't command anything in the United States. He has no emotive, leadership tie to any force, and I think that is perhaps good. I think there is a good debate about whether the CDF should have **command** responsibility over the forces, rather than coordination or directional capability. Again, it's a good discussion. In going back over the development of this paper, which I really did enjoy doing, there are certain things that do strike me. Geography really makes a big difference. Most of the nations that I've talked about in my paper have maritime foci and are very either historically or currently dependent upon naval engagement. They are also countries of fairly significant technological base and because of their commerce they have developed air power capabilities. A lot of pretty significant nations around the world have not had cause to do that and, therefore, there has been a very disproportionate emphasis on armies versus air forces and navies. The other thing I would say is that military history itself has a tendency to be a driver in this sense. Clearly, in my eyes, the United States grew to be more joint because of the types of wars that it has fought, because they have been on peninsulas, in areas of the world that require air, land and sea capability. Land-locked nations have a different perspective. China, for example, I think is going to find a real difficulty developing a joint perspective simply because of its overwhelming land focus and, although its military capability will grow and change tremendously over the next decade, I don't think it's ever going to reach the level of joint synergy that we're talking about here, for geographic and cultural reasons. I think that does play a role.

*Brigadier Jim Wallace (Army):* Professor, I hope you won't be sorry that you invited the Army to speak. I would like to issue with your answer earlier to the question about the importance or the significance of this internecine fighting, which invariably happens at the strategic level, particularly in light of the fact that I understood you

attributed the failure of the post-Macarthur generation of officers to fully embrace jointery to the fact that many of them had come out of that environment and then tried to carry that into the theatre of operations. It seems to me that if you are going to reward a single Service approach and loyalty to that extent at the strategic level, you almost nullify any advances you might make in jointery at the intermediate level, at the operational level, and it seems to me that jointery is not something that you can jump in and out of. So I would just ask you to comment on that, because I was a little surprised at your reply.

*Professor Ballard:* Thank you. A couple of things, again from my background perspective. Please understand that our [US] Service Chiefs don't command any field forces. They have organise, train and equip responsibilities, but they don't have operational control of any of the forces and, therefore, it is pretty easy for their Service Chiefs to put on different hats. We, in fact, have had several Service Chiefs go on to be CINCs, or vice versa, and they have been completely different commanders when they have had these different roles – it really is a different sense of mission. The other point that you made that I really do think is very important and something that I didn't bring out very well – I wish I could have done this better in my paper – is the difference in the operational level requirements on forces. I think command at the operational level is very different than strategic or tactical command, and I think that the techniques that operational level employment requires of you make it very easy to overlook a lot of the Service bias. Like Colonel Meilinger said before, when you get into the fight everybody is working to make it work together as best they can. It is true that education and training make staffs much more capable and officers more valuable at the operational level. I have been on six joint operations or major exercises, and I have never seen working level people take their Service parochialism seriously while they are developing plans or executing operations. What happens is, once those decisions have to be reached, it is more senior perspectives that often have to bring together other outside political, diplomatic and other concerns that have a tendency to make that more difficult. I am a big supporter of joint education and training but I think that you can and should perform your Service core competencies and joint capabilities based upon the job, not based upon purely your background and education.

That's a pretty unclear answer. I am an apostle for jointness, but I don't think I would be any good as a joint officer if I didn't know how to understand an infantry battalion and how to command one first.

# AIR POWER AND ASYMMETRIC THREATS

DR RICHARD P. HALLION

## INTRODUCTION

It is a great pleasure to have the opportunity to make a return visit to Australia and address this conference, and I am very grateful and appreciative to the organisers for inviting me. I need not remind anyone in this audience that the roots of Australian-American aerospace power cooperation are so intertwined and internetted that, for all practical reasons, we stand – or should I say fly? – together as one. You have fought or otherwise supported us in every war that we have waged over the last century, and we have shared both victory and loss together. The Australian War Memorial bears suitable evidence to the magnificent courage and extraordinary record of Australians fighting in defence of freedom. It is a source of great pride to Americans visiting that Memorial that we see within it evidence of the shared burdens of responsibility we have borne together, as well as the tremendous bonds of respect and friendship that link our two nations.

We share daunting burdens today, whether confronting the challenges of regional development and transformation on our very borders, or the challenges of regional stability – indeed global stability – at distances many thousands of miles from both our continents. It is fitting that our two nations are hemispheres apart, for it reminds us that in the post-Cold War era, global security permits neither isolationism nor the deliberate ignoring of the welfare and stability concerns of the larger world.

Now when I reviewed the title of this session – Air Power and Asymmetric Threats – I have to confess that I felt a little bit like one of our great Air Force leaders, General Chuck Horner. A few years ago we were at a conference entitled 'Dueling Doctrines and the New American Way of War'. Speaker after speaker referred to 'coercive diplomacy'. Finally, it was Horner's turn to speak. He peered out over the audience, shook his head slightly, and said, 'This intellectual stuff – "air power and coercive diplomacy" – flew right by me. If they had said "air power and kicking their teeth in", I'd understand it'.

## ASYMMETRY IN WARFARE: A (VERY) BRIEF HISTORICAL OVERVIEW

The history of warfare is, to a great degree, the history of asymmetric approaches. It is, to a great degree, enshrined in our mythic past, our religions, our history, our popular culture. Three quick examples. David didn't engage Goliath, the tank of his day, in the close fight. Rather, he used a stand-off aerospace weapon coupled with a manoeuvre advantage to defeat the foe. The other two examples come from Hollywood. First,

many of you have probably seen the Steven Spielberg film 'Raiders of the Lost Ark'. A scimitar-wielding giant abruptly confronts the hero (played by Harrison Ford) in a market place. Through vigorous and impressive wrist-motion, he threatens to make mincemeat of his hapless victim-to-be. Nonplussed, Ford, almost absent-mindedly, reflexively draws a huge revolver and shoots the swordsman dead. In brief, modern man casually offsets a brutish thug via stand-off and technology, obviating the need for the close fight. A second film, 'The Untouchables', about the liquor wars in Chicago during the 1920s and 1930s, stars Sean Connery, as the old streetwise cop lecturing a young Kevin Costner: 'This is Chicago. If your opponent comes at you with his fists, you hit him with a club. If he comes after you with a knife, you pull out a gun and shoot him.' (It may well be apocryphal but it echoes what my father and his brothers, all old cops, often told me about big city police work, at least in the US.)

Now these examples are pretty mythic. But we see some remarkable real world ones that are worth noting before examining the world we are in today. We can take an example from the ancient world. The key to Assyria's military success was its doctrinal strategy coupled with appropriate technology and force structure. They used the two-man chariot for rapid manoeuvre, the archer in each chariot employing 'precision engagement' at stand-off distance. Drivers almost never stopped moving, and swords and other short-range weapons were only carried as weapons of last resort. Using such tactics, the Assyrians overwhelmed the early Sumerians, who, like other ancient peoples, envisioned using wheeled vehicles only to transport infantry into position to engage in close battle.[1] This was a clear asymmetric warfighting approach.

Perhaps the best-known medieval examples are the battles of Crecy and Agincourt, where English bowmen offset the mass and power of armoured French knights, with disastrous effects upon their foe. The wars of the Napoleonic era pitted a sea power against a land power; the sea power won. Colonial wars of the late 19th century witnessed masses of tribesmen decimated by Maxim gun-wielding imperial armies. World War I introduced its own asymmetric mechanistic warfighting systems - the airplane, tank, and submarine - and confirmed the deadly refinement of another: the machine gun. All four of these, in particular times and places, afforded superiority to one side or another. More importantly, the Great War marked the beginning of three-dimensional warfare: warfare from below the surface of the sea and above the surface of the earth, a genuine revolution.

The Second World War witnessed widespread use of airplanes, tanks, and submarines, but also demonstrated that mere possession of these and other weapons wasn't enough: one had to have the proper doctrine, the proper strategy, and the proper force structure to take fullest advantage of their potentially war-winning capabilities. The failure of France in 1940, the Luftwaffe defeat over Britain in that same year, the collapse of Nazi Germany in 1943–45, and the destruction of Japan's Pacific empire all illustrate these points. Overall, it was three-dimensional power – particularly air power – that proved the dominant force in both the Pacific and European theatres. Joseph Goebbels (like his wife loyal unto death to *der Führer* and the Nazi cause, including the killing of their entire family in its name) wrote in 1945 as the 'Thousand Year Reich' collapsed around him that both he and Hitler were agreed on one major point: 'Again

[1] For a further discussion of this, using both textual evidence and evidence from Assyrian sculpture, see C. J. Gadd, *The Assyrian Sculptures*, British Museum, London, 1934, pp 31–32.

and again we return to the starting-point of our conversation. Our whole military predicament is due to enemy air superiority'.[2] More recently, the world has witnessed how the asymmetric advantages of aerospace power application have been used to offset more traditional surface-dominant approaches employed by adversaries ranging from Iraq in 1991 to Kosovo in 1999.

These random examples illustrate, I think, an important point. While much of the popular literature on contemporary and future security concerns implies that, somehow, asymmetric warfighting is new and unprecedented, in fact, asymmetric warfare and asymmetric approaches have been far more the norm of previous warfare than the exception. Indeed, arguably, it is 'non-asymmetric warfare' that is the truly exceptional form of combat: and when such conflict is typically fought, it results in stalemate or Phyrric victories.

## AEROSPACE POWER TODAY: THE DOMINANCE OF 3D ASYMMETRY

Air power today – aerospace power, in the case of the United States – is the Western World's asymmetric offset against opponents who are compelled by doctrinal choice, economic necessity, or the realities of technological circumstances to rely upon older and less relevant forms of warfare. The experience of both the Gulf and the Balkans, together with the promise of further advances in aerospace power capabilities to come, illustrate this. Writing in 1996, military observer Eliot Cohen stated that:

> A military cliché has it that what can be seen on the modern battlefield can be hit, and what can be hit will be destroyed. Whereas at the beginning of the century this applied with deadly certainty only to frontline infantrymen, it now holds not only for machines on the front lines but for supporting forces in the rear ... The colossal manoeuvres of the coalition armies in the deserts of Kuwait and Iraq in 1991 may in retrospect appear, like the final charges of cavalry in the nineteenth century, an anomaly in the face of modern firepower.[3]

But the advantages of this kind of attack are not limited to encounters with massive deployed forces possessing large and vulnerable weapons such as tanks and vehicles out in the open. DESERT STORM had a strong and robust strategic component, and Operations DELIBERATE FORCE (1995) and ALLIED FORCE (1999), as contentious an air campaign as the latter might have been, nevertheless clearly demonstrated that the leverage air power offers over an opponent is not limited to deserts.

Indeed, it was the strategic aspects of ALLIED FORCE that, in the eyes of Lieutenant Genera Michael C. Short, NATO's joint force air component commander (who styled himself 'a big fan of asymmetric warfare') played the most significant role in bringing

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2 Goebbels, Diary entry for 21 March 1945.

3 See Eliot A. Cohen, 'A Revolution in Warfare', *Foreign Affairs*, Vol 75, No 2, March-April 1996, pp 44–45.

Milosevic to heel.[4] For his part, the noted historian John Keegan, writing as defence editor to Britain's *Daily Telegraph*, stated (in what has already become a well-known if controversial passage):

> There are certain dates in the history of warfare that mark real turning points ... Now there is a new turning point to fix on the calendar: June 3, 1999, when the capitulation of President Milosevic proved that a war can be won by air power alone ... the air forces have won a triumph, are entitled to every plaudit they will receive and can look forward to enjoying a transformed status in the strategic community, one they have earned by their single-handed efforts. All this can be said without reservation, and should be conceded by the doubters, of whom I was one, with generosity. Already some of the critics of the war are indulging in ungracious revisionism, suggesting that we have not witnessed a strategic revolution and that Milosevic was humbled by the threat to deploy ground troops or by the processes of traditional diplomacy ... The revisionists are wrong. This was a victory through air power.[5]

Rand Corporation studies of air power applications against light infantry in typical Third World crisis conditions indicate that precision air engagement – including surveillance, sensor deployment, and direct attack – offers very high leverage over employed surface forces. This is true whether one is dealing with a mechanised force, a guerrilla-type army in a wooded or jungle environment, or, even, an individual urban sniper *à la* Sarajevo. The combination of new and enhanced sensor technology, coupled with information exchange between targeting systems and strike aircraft, helicopters, or smart missiles, can defeat threats that, in previous times, were considered too difficult to thwart without greatly widening a war effort. Even light infantry forces generate by their operations and equipment a variety of detectable signatures – visual, chemical, infra-red, electromagnetic, radar, and acoustic – that render them vulnerable to a range of active sensor systems, and their vulnerability will continue to increase in the years ahead.[6]

Further, in the precision weapon era, such forces are even more vulnerable to the traditional psychological pressures of air attack that have proven so overwhelming in previous wars, particularly the notion that the enemy is omniscient as well as omnipotent.[7] In Kosovo, for example, one Serbian survivor noted that:

> They knew everything about us. There wasn't anything they didn't know. If we lit a cigarette they could see it. God knows what they were dropping on us, all sorts of bombs. We didn't expect that intensity. We couldn't fight planes with mortars. And our anti-aircraft guys couldn't do anything ... It

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4 John A. Tirpak, 'Short's View of the Air Campaign', *Air Force Magazine*, Vol 82, No 9, September 1999.

5 John Keegan, 'Please, Mr. Blair, Never Take Such a Risk Again', *The Electronic Telegraph*, www.telegraph.co.uk, issue 1472, 6 June 1999.

6 See Alan Vick, David T. Orletsky, John Bordeaux, and David A. Shlapak, *Enhancing Air Power's Contribution Against Light Infantry Targets*, Rand, Santa Monica, 1996.

7 For an excellent discussion of the psychology of air attack, see Group Captain (now Air Commodore) A. P. N. Lambert, 'Shattering Impact: The Psychology of Air Attack', in Richard P. Hallion, *Air Power Confronts an Unstable World,* Brassey's, London, 1997, pp 83–109.

> felt like we went over every inch of Kosovo ... We spread out, one of us every hundred meters, but they just picked us off. Bosnia was a spa compared to Kosovo. Everywhere there was a smell of bodies ... I'm going to the woods, where everything is absolutely calm. I'm going to spend 10 days there, thinking of nothing, alone. I want to be alone.[8]

Much of what this survivor believes is incorrect; it was impossible to know the kinds of things that he takes for granted were common knowledge among NATO planners and aircrew. But the important point remains: the appearance of strike aircraft and the attacks that were made offset the occupation of Kosovo by Milosevic's forces – in short, it represented, as did the strategic air campaign affecting Belgrade, yet another example of the asymmetry of air power.

## AIR DEFENCE: THE CLASSIC ASYMMETRIC RESPONSE TO AIR POWER

Almost from the outset of aviation, the advent of airborne military systems spurred the attempted development of counter air power strategies, centred on anti-aircraft artillery and, later, fighter aircraft. For example, the Krupp company developed the first anti-aircraft cannon - for shooting down balloons – as early as the Franco-Prussian War and the subsequent siege of Paris (1870–71), and the first military airplane lost to ground fire fell in 1912. Both anti-aircraft fire and fighter aircraft posed a common threat to both aircraft and dirigibles during the First World War. During the 'strategic' air campaign Germany waged against Great Britain in the Great War, anti-aircraft fire downed 14 per cent of the 21 Zeppelin airships lost in combat over England, and approximately 44 per cent of the 27 German bombers shot down by British defences. Fighters destroyed 86 per cent of Zeppelin attackers and approximately 56 per cent of attacking bombers. This corresponded to a loss rate of 10.4 per cent for Zeppelins and 6.4 per cent for German long-range bombers.[9]

During the Second World War, radar-cued anti-aircraft fire and fighters proved deadly to attackers: German anti-aircraft gunners and fighters took a fearsome toll of allied bombers; the allies could point to successes against the V-1 cruise missile and the Japanese Kamikaze. Of the 18,418 US Army Air Force aircraft lost flying against Nazi Germany in World War II, 'triple A' claimed 42 per cent (7,821), and fighters shot down 37 per cent (6,800). (Had Nazi gunners possessed the proximity fuse, German flak efficiency would have risen by a factor of nearly 3.5, making B-17 operations hazardous in the extreme, and preventing B-24 operations altogether.) Fully 53 per cent (a total of 2,110 missiles) of the V-1s downed over England fell to flak and barrage balloons, fighters claiming 47 per cent (1,847 missiles). Altogether, 3,957 V-1s fell to British defences, representing approximately 53 per cent of those observed (7,488), and

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8 Reflections of 'Milos', a Yugoslavian soldier quoted by journalist Rory Carroll, '"I'm Not Right in the Head Now": A Conscript's War', *The Observer*, 20 June 1999, p 17.

9 Kenneth P. Werrell, *Archie, Flak, AAA, and SAM: A Short Operational History of Ground-Based Air Defense*, Air University Press, Maxwell AFB, 1988, p 1.

approximately 38 per cent of the 10,492 V-1s launched. (Approximately 2,000 – 19 per cent – of these V-1s crashed right after take-off.)[10]

The Japanese Kamikaze menace – using manned aircraft as precision weapons, anticipating the cruise missile of the modern era – was a desperate asymmetric attempt by Japan's leadership to reverse the misfortunes of the Pacific War. The combination of fighters and anti-aircraft fire, coupled with early warning radar cueing and proximity fused shells, defeated this threat (the most serious faced by American seamen during World War II), destroying approximately 86 per cent of the approximately 2,800 attackers that sortied against American vessels. It is worth noting, however, that the 14 per cent that managed to evade defenders sank 34 ships and damaged 368 others, killing or wounding nearly 10,000 seamen. At war's end, Japan possessed nearly 10,000 aircraft that could have been used for Kamikaze attack. As a result, Japan's leadership not unreasonably assumed it could inflict at least 50,000 casualties upon an invasion force, reason enough for veterans of the Pacific War to be thankful for that other asymmetric weapon, the atomic bomb.[11]

Ground-based anti-aircraft defences took a heavy toll of Korean attackers. Communist fighters cost 143 American aircraft in Korea, nearly 12 per cent of all losses to enemy action. But Communist anti-aircraft fire claimed the other 88 per cent, fully 1,087 airplanes. Anti-aircraft fire forced changes in tactics, and this, in turn reduced bombing accuracy. For example, dive-bombing circular error probables (CEPs) increased from 75 feet in 1951 to 219 feet in 1953, forcing additional sorties to kill a target.[12]

The surface-to-air missile (SAM) has generated its own asymmetric impact upon air warfare operations. First experimented with during the Second World War, the SAM came of age in the Cold War. It is now 41 years since the first SA-2 shot down an opposing aircraft, a Nationalist Chinese RB-57D reconnaissance airplane. Though SAMs played an essentially negligible role in the 1967 Arab-Israeli war, they figured prominently in the Vietnam war. For example, during the ultimate air campaign of that war, LINEBACKER II, 32 North Vietnamese MiG fighters shot down only two opposing aircraft for the loss of six of their own. But 18 airplanes, including no less than 15 B-52 bombers, fell before 1,285 SAMs, a ratio of 71 SAMs per aircraft lost. One SAM site alone was responsible for shooting down between five and nine of the B-52s lost.

Though aircrews and mission planners became highly adept at dealing with the SAM threat, the threat did force significant changes to air operations and tactics. For example, in 1965, American aircraft had gone into combat without electronic or anti-SAM escort. After the introduction of SAMs, this changed dramatically. A ROLLING THUNDER strike package in 1968 required 16 escorts for 16 strikers, a ratio of supporter-to-striker of 1:1. The escorts consisted of eight air defence suppressors (SEAD) and eight air superiority fighters (MiGCAP). By 1972 and LINEBACKER II,

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10 Data computed from Werrell, *Archie, Flak, AAA, and SAM*, pp 18–19, 34, 42.

11 See Japanese air order of battle, Document 704.6311-1 (15 August 1945), Plate 24, Historical Research Agency, Maxwell AFB. Japanese 50K casualty estimate from a lecture by Dr Edward Drea of the US Army Center for Military History. See also Rikihei Inoguchi, Tadashi Nakajima, and Roger Pineau, *The Divine Wind: Japan's Kamikaze Force in World War II*, Naval Institute Press, Annapolis, 1958.

12 Werrell, *Archie, Flak, AAA, and SAM*, pp 74–5.

this had increased to a ratio of 2.6:1 – 42 escorts for 16 strikers. The escorts consisting of 24 MiGCAP and 18 SEAD (eight attackers, eight chaff droppers, and two jammers). Incidentally, by DESERT STORM supporter-to-striker ratios had risen to nearly 4:1 – a strike on Tallil airfield consisted of eight attackers, 26 SEAD airplanes, and four MiGCAP.[13]

The classic example of how creatively employed surface-to-air missiles, mobile anti-aircraft gun carriages, and man-portable air defence missiles (Manpads) could combine to offset an air attacker is the 1973 Arab-Israeli war. In that conflict, the use of the SA-6, ZSU-23-4, and SA-7 generated massive losses to attacking Israeli aircraft. In the first four days of the conflict, Israel lost approximately 60 aircraft, representing approximately 19 per cent of its prewar combat aircraft inventory. Intensive missile barrages forced defenders down into the envelope of the ZSU-23-4 and SA-7; general Chaim Herzog called it 'a desperate battle', and one analyst noted that the defences prevented the Israeli air force from fulfilling 'its own expectations and those of the ground forces'.[14] Israeli forces had to resort to using artillery to suppress enemy air defences, together with air strikes against air defence sites. In time, the situation improved and Israel ultimately regained the upper hand: but 19 days of combat had cost the Israeli Air Force 109 aircraft, 35 per cent of that country's prewar air combat strength.

In passing, it is worth noting that both Vietnam and the 1973 Arab-Israeli war resulted in dramatic rethinking of how to conduct air campaigns in the face of highly integrated air defence networks. Out of this, certainly for America, came a much greater emphasis upon electronic warfare, SEAD, and low-observables (stealth). Likewise, there was a desire to minimise the exposure of combat aircraft to a high threat environment by making them more productive per sortie via increased precision. In fact, the whole precision revolution, from GPS navigation through laser-guided bombs and the like, as well as restructuring the command and control of air combat forces, and the acquisition of new advanced aircraft systems, really reflected issues and concerns surfaced during the Vietnam era.

In the 1980s, the experience of the Soviets in Afghanistan offered up its own sobering challenge, highlighting the dangers of the low-altitude environment. In that conflict, the introduction of the so-called Stinger Manpads dramatically impacted the ability of the Soviets to conduct both fixed and rotary-wing battlefield operations, giving Afghani rebels the ability to operate largely in the open against Soviet troops and Afghani Government forces. Bereft of effective air support, and with rising casualties from this 'Soviet Vietnam', military support, and then political support, for a continued Soviet presence in Afghanistan dwindled away.

Thanks to the lessons learned in Vietnam and the Middle East, and the actions taken in response to those lessons, the allied coalition that went to war against Iraq in 1991 did so with tremendous advantages in equipment and operational art. But it is worth noting

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13 Werrell, *Archie, Flak, AAA, and SAM*, pp 107, 125; Christopher J. Bowie, *Untying the Bloody Scarf: Casualties, Stealth and the Revolution in Aerial Combat*, IRIS Independent Research, Arlington, 1998, pp 9–10.

14 Chaim Herzog, *The War of Atonement, October, 1973*, Little, Brown and Company, Boston, 1975, p 256; Yehuda Weinraub, 'The Israel Air Force and the Air-Land Battle', *Israeli Defence Forces Journal*, III, No 3, Summer 1986, p 83.

that over the length of that quick war, the Iraqi forces doggedly attempted to rebuild their air defences, SAMs continued to take a small toll of aircraft, and the low-altitude environment, thanks to Manpads, was essentially off limits. In short, the missile environment of the modern era mitigated against the kind of traditional attack profiles followed for much of the Cold War, emphasising low-altitude weapon delivery by tactical aircraft. In this new environment, the imprecise unguided weapon was of increasingly marginal use. Instead, operations at higher altitudes and longer slant ranges demanded precision of the sort that in the pre-electronic, pre-laser era would simply have been unattainable.

It is that model of war that, largely unchanged, continues to the present day. It is exacerbated by the strategic circumstances of the contemporary world, an environment that has witnessed dramatic reductions in the size of military forces, and, certainly for air forces, a desire to make each individual aircraft system and sortie far more productive. That anti-aircraft systems remain a threat of the gravest concern is seen by the NATO experience in the Balkans. During Operation ALLIED FORCE, the air war over Serbia, NATO airmen were threatened by SA-2, 3, 6, 7, 9, 14, and 16 SAMs, as well as conventional 57mm and 130mm anti-aircraft cannon. The numbers were formidable: 130 SA-9 launchers, 80 SA-6 launchers supported by 25 radars, 16 SA-3 systems, three SA-2s, 10,000+ SA-7/14/16 Manpads, 54 57mm cannon, and 350 130mm cannon. This was, of course, in addition to 104 fighters, consisting of 16 MiG-29s and 88 MiG-21s. Integrated and redundant, the Yugoslavian air defence network stretched from sea level to high altitude, ranging across the operational envelope of all coalition attackers.

During the war, nearly 900 SAMs were launched against coalition airmen and MiG-29s rose to contest for control of the air. Air superiority and air defence suppression operations were thus not merely aspects of the Serbian air war, but at its very heart: had control of the air been lost or compromised, the full range of NATO power brought to bear on the Milosevic regime would have been fractured and dispersed and, in all likelihood, the conflict would have been lost. It is worth remembering for the future that ALLIED FORCE was far from the 'risk-free' air war portrayed by some.[15]

## ASYMMETRIC WARFARE AND ACCESS DENIAL: THE CASE OF THE FALKLANDS

Asymmetric warfare can pose a significant challenge for a combatant attempting to gain or retain access into a crisis region. And this challenge is by no means restricted to those powers that have near-parity with their foes. Even a substantially robust power can find itself in a situation where its power-projection capabilities are compromised or thwarted, and success is far less certain that might have been thought. A classic example is the Falklands war of 1982.

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15 HQ USAF, *The Air War Over Serbia: Aerospace Power in Operation Allied Force, Initial Report,* HQ USAF, Washington DC, 2000, p 11.

Here maritime air power and submarines operated asymmetrically against surface vessels. A British submarine, HMS CONQUEROR, sank an Argentine cruiser and, by this action, largely intimidated the Argentine Navy into remaining in port. Argentine strike aircraft sank six ships (two destroyers, two frigates, a container ship functioning as an aircraft carrier, and a fleet auxiliary) and damaged a further 13 (four destroyers, six frigates, and three fleet auxiliaries), nearly bringing about the defeat of the naval task force.

The Falklands campaign illuminated the increasing threat to ships by maritime air and missile attack. Ships were heavily damaged or sunk, even when weapons did not explode; for example, the British destroyer HMS SHEFFIELD, hit by an Exocet that failed to detonate, succumbed to a fire triggered by the missile's unspent fuel.[16] The British victory owed as much to the operational inexperience of Argentine airmen and bomb fusing problems as it did to the skill and technological advantages of its own forces. Fully 55 per cent of Argentine bombs failed to explode even though they hit their targets. Had they done so, it is likely that at least six of the other 13 vessels damaged would have been lost. Such destruction and damage would inevitably have so weakened the task force that it would have spelled disaster for the entire expedition.[17]

It is intriguing to speculate what such a defeat in the Falklands might have had on the subsequent history of the 1980s, particularly as the European governments confronted a Soviet Union seeking to compromise the North Atlantic Treaty Organisation and the Western alliance. Concern over the success that Argentine airmen were having in attacking British fleet units is clearly evident in the memoirs of key British decision-makers.[18] The Thatcher Government likely would have fallen, perhaps fatally weakening the characteristically strong alliance of the United States and Great Britain that did much to bolster European resistance as NATO faced the Soviet Union in the latter – and most serious – years of the Cold War. The loss of a sea war thousands of miles from Europe might thus have resulted in a dramatically different end – if indeed it **did** end – to the Cold War.

## SOME CHARACTERISTICS OF THE NICHE THREAT

It is well to remember the Falklands experience, for such potentially profound outcomes continue to be possible risks of far-flung regional contingencies should

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16 Royal Navy Directorate of Naval Staff Duties, *The Fundamentals of British Maritime Doctrine*, BR 1806, Her Majesty's Stationery Office, London, 1995 p 193. Additionally, Annex B, 'The Falklands War 1982 from the Viewpoint of Doctrine', pp 189–195 is a useful summary of the campaign. I wish to thank CAPT Chris Page, RN (Ret'd) the historian for the Royal Navy, for making this work available to me.

17 Statistics are computed on the basis of information in Jeffrey Ethell and Alfred Price's excellent *Air War South Atlantic*, Jove Books, New York, 1987, Appendices 9 and 10, pp 252–254, and elaborated discussion from within the text. For excellent memoirs of the Falklands campaign by commanders of British forces, see Sandy Woodward, *One Hundred Days: The Memoirs of the Falklands Battle Group Commander*, Fontana, London, 1992; and Michael Clapp and Ewen Southby-Tailyour, *Amphibious Assault Falklands: The Battle of San Carlos Water*, Orion, London, 1997.

18 For example, the previously cited Woodward, and Clapp, and, particularly, Margaret Thatcher's *The Downing Street Years*, HarperCollins, London, 1995, especially pp 216–7, 225–235.

forces lacking robust friendly air power come under modern air and missile attack. What was, in fact, the problem in the Falklands? The problem was that even though British forces possessed air superiority, they did not possess air supremacy – the ability to so dominate the opponent as to prevent him from inflicting significant losses upon friendly forces.

A major military power, by definition, must possess robust and highly capable forces, capable of meeting multiple threats and simultaneous or near-simultaneous crises, ever-ready to confront the 'peer' competitor. But if such a power is required to engage and win the regional fight (against the so-called 'niche' competitor), certain problems arise.[19] The forces and capabilities the larger power must possess to project into a region must be sufficient to overcome the strengths of the regional niche actor who has the luxury of only having to prepare for what is likely to happen within his own region. Again, in the case of the Falklands, the amount of force that Britain was able to bring to bear was barely sufficient to meet the threat posed by a decidedly inferior state – but a state operating in its own backyard. Today, in the unstable post-Cold War world, the niche player poses a particularly serious challenge for individual major actors, as well as coalitions of smaller actors partnered together. Kosovo, for example, had the appearance of a regional contingency. In reality, for the post-DESERT STORM downsized United States Air Force, it was a major theatre war.

In the era of increasingly sophisticated exported fighter and strike aircraft, sophisticated munitions, sophisticated surface-to-surface and surface-to-air missiles, information-dependent operations, weapons-grade nuclear material, chemical and biological weapons, and extremely active terrorist and paramilitary groups, this is all very disturbing. In the mid-1990s, a US Department of Defense Science Board Summer Study examined the 'generic' characteristics of a so-called '21st century adversary' and found that incorporating most of these characteristics is well within the budgetary capabilities of many nations, some of which have had decidedly militaristic or unpleasant pasts.[20] These included:

- active weapons of mass destruction (WMD) development programs and, perhaps, capabilities;
- investment in information warfare systems/capabilities;
- possession of small conventional submarines with smart torpedoes, together with both simple and sophisticated sea mines;
- possession of precision weaponry, such as laser-guided bombs and missiles, anti-shipping missiles, and, perhaps, longer range cruise and ballistic missiles;
- reliance on Global Positioning System/GLONASS technology for positioning;

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19 For an excellent discussion of the characteristics of peer and niche competitors, within the context of aerospace campaign planning, see Jeffery R. Barnett's *Future War: An Assessment of Aerospace Campaigns in 2010*, Air University Press, Maxwell AFB, January 1996.

20 As discussed in a briefing to the Second Working Group Meeting, 'The Merits of Air and Space Power', at the Center for Strategic and International Studies, Washington DC, 3 February 1997. The '21st Century Adversary' generated by the DSB study triggered a 1996 DSB Task Force that examined tactics and technology that might be required for 21st century military superiority.

- possession of small unmanned air vehicles for intelligence, surveillance, and reconnaissance;
- possession of an integrated air defence network tied to advanced fighters (at least MiG-29 equivalent), advanced surface-to-air missiles, and anti-aircraft artillery;
- possession of battlefield rocket artillery with advanced anti-armour submunitions; and, finally
- possession of robust command and control together with extensive investment in underground facilities and command centres.

This kind of adversary, even if only possessing a few selected capabilities of those enumerated here, is likely to cause a major problem for the out-of-region actor needing access to respond to a rapidly unfolding contingency. The implications of a major power suddenly confronted with the loss of hundreds or perhaps thousands of lives due to the actions of a niche actor are best left to the imagination. Unfortunately too often there is a tendency to ignore the obvious. One distinguished student and practitioner of warfare, General Charles Horner, has written provocatively (echoing the tone of Jonathan Swift) that:

> Many acclaim the role of precision weapons for our forces but ignore the threat they pose if they are in the hands of the enemy. What would be the lessons learned if several hundred canisters of live Sensor Fused Weapons were released by a red force ballistic missile on the 24th Division during a Fort Irwin engagement? What if radar homing surface-to-air missiles were employed by the red force during a Red Flag exercise in the Nevada desert, not using centralised Soviet tactics/doctrine but instead using decentralised yet cooperative engagement operations as would be used by our best and brightest if unleashed from their stagnant doctrines? Imagine the shock on our populace if a single cruise missile were actually allowed to score a direct hit on the Carl Vinson aircraft carrier during a Solid Shield joint exercise with the attendant loss of life numbering in the 4,000 to 5,000 range?[21]

Worse is the threat of the genuine weapon of mass destruction. As Lawrence Grinter and Barry Schneider have written, 'It is a fact of life that even poor states such as the Democratic People's Republic of Korea, if determined, can develop revolutionary weapons that might offset the conventional firepower of the world's sole remaining military superpower'.[22] An alternative vision, as Drs Grinter and Schneider have posited, is to concentrate firepower, not troops, redefining mass so as not to expose large numbers of forces to either the potentially deadly effects of a WMD campaign, or to munition(s) that directly lead to high casualties among deployed forces.[23] In this

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21 General Chuck Horner, 'Defense Alternatives: Forces Required', in Harlan K. Ullman and James P. Wade, et al, *Shock and Awe: Achieving Rapid Dominance*, The Center for Advanced Concepts and Technology, National Defense University, Washington DC, 1996, pp 174–5.

22 Lawrence E. Grinter and Barry R. Schneider, 'On Twenty-first Century Warfare', in Schneider and Grinter (Eds), *Battlefield of the Future: 21st Century Warfare Issues*, the third volume in the Air War College *Studies in National Security* series, Air University Press, Maxwell AFB, September 1998, p 267.

23 Grinter and Schneider, 'On Twenty-first Century Warfare', p 271.

regard, a strategy of engagement from a distance, blending the reach and power of modern aerospace assets coupled with the vigilance – the awareness – that comes from intelligence, surveillance, and reconnaissance platforms operating in and above the atmosphere, would act to offset the strategy of a regional player seeking to hold large numbers of forces hostage.

As this audience is certainly aware, the daunting prospect of the enemy who is equipped with weapons of mass destruction, whether chemical, biological, nuclear, or combinations of these, occupies the thinking and activities of a great many around the civilised world. It is a particular challenge for the United States. As just one example, in the late 1990s, the growing threat of North Korean WMD development alone resulted in an immediate US$1 billion expenditure by the Department of Defense for active and passive defences, counterforce projection, and upgrades to special forces.[24] Rand's Zalmay Khalilzad has correctly noted that for the United States this kind of challenge requires urgent action:

> To counter the spread of WMDs and ballistic and cruise missiles, the United States should seek to develop increased capability for location and destroying even well-protected facilities related to biological, chemical, radiological, and nuclear weapons and their delivery systems. It will be equally important to have greater capability to defend against the use of these weapons, including both active and passive defence. Deploying robust, multi-layered ballistic and cruise missile defences is important for protecting the United States, its forward-deployed forces, and its allies, the last task helpful in gaining allied participation and cooperation in defeating aggression in critical regions. There is bipartisan support for increasing US defence against missiles.[25]

But as desirable as such may be, making it a reality in a time of declining military force structure, calls for further defence cuts, and a perception by many that the world is far more secure than it is, is very, very difficult, as the five year history of defence decision-making since this was written clearly shows.

## SOME THREATS: FIGHTERS, SAMS, MISSILES, INFORMATION WARFARE, AND SPECIAL OPERATIONS

As modern warfare has shown, the leverage of precision attack against an opponent is now so high that opponents devastated by such attack do not have the time to absorb the destruction, build back up, and then return to the offensive. War, more than ever before, is truly a 'come as you are party', and when one side has lost critical forces, those forces can no longer be rebuilt in such a timely fashion as to re-engage the foe. In these circumstances, a nation – particularly the United States – has to be able to project force quickly and decisively over long distances into a crisis region. Threat systems and capabilities that endanger that ability thus must be taken very seriously indeed.

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24 Grinter and Schneider, 'On Twenty-first Century Warfare', p 267.

25 Zalmay M. Khalilzad, *From Containment to Global Leadership? America & the World after the Cold War,* Santa Monica, Rand, 1995, pp 31–2.

Aerospace power projection involves the integration of disparate parts and making them all work together. To give an example that illustrates this challenge, let's look at the recent air war over Serbia, and what was involved in projecting a single B-2 sortie from Whiteman AFB, Missouri, to Yugoslavia and back:[26]

- The B-2 required effective weapons, hence it employed JDAM.
- But JDAM is useless without GPS satellite positioning.
  - The GPS 'constellation' requires constant replenishment.
  - Replenishment requires robust, reliable space launch capability.
  - Space launch means we need advanced systems like the Evolved Expendable Launch Vehicle (EELV).
  - Existing launch vehicles and the EELV require modernised space ranges.
- The B-2 requires airborne tankers, operating from a variety of bases and fuel distribution points.
- Overseas basing drawdowns requires our Air Force to be truly expeditionary, bringing their infrastructure with them.
- All of this depends on the quality and motivation of our people.

Clearly, any adversary that can 'break' portions of a process such as this can have a serious impact on a nation's ability to project power. With that in mind, here is a selection of a few such threats:

**Fighters**

America's national power projection is built, whether many critics recognise it or not, around an often-unspoken assumption: That we will have absolute, overwhelming air supremacy over any opponent. Since 1953, the United States Army and United States Marine Corps have not lost a single combatant to enemy aircraft attack. It has become a virtual article of faith for the American military that American forces will not have to suffer the depredations of an enemy air force. Since the introduction of the F-15 and F-16, the United States has enjoyed an unprecedented period of air supremacy. Together, those two aircraft types, flown by American pilots and their allies, have shot down over 130 opponents without themselves suffering any air-to-air loss. (In contrast, the overall air superiority victory-loss ratio in Vietnam was 3.63:1 – nearly four North Vietnamese fighters shot down for every American air superiority fighter lost; a total of 45 American fighters were lost on air superiority missions, compared to 163.5 North Vietnamese fighters shot down.)

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[26] I have drawn this example from 'AF Posture Statement and Future Challenges', a speech by the Honorable F. Whitten Peters, the Secretary of the Air Force, to the Aerospace Power Seminar Series, 17 February 2000.

Unfortunately, the F-15 and the F-16 have been flying for over a quarter-century. Within a year or two it will be possible that, somewhere, an F-15 or F-16 will be flown by a pilot who was not yet a gleam in the parents' eyes when it first leapt down a runway. Not surprisingly, then, given the tremendous proliferation of SAMs, newer generation fighters, increasingly networked air defence forces, and an ageing American fighter force, it is impossible to guarantee that this level of air dominance – for such is what it truly is – will continue unless the right choices are made in fighter acquisition for the future.

Today, outside the United States, there are four advanced fighters in development and early stages of deployment: the Eurofighter, Saab Gripen, Dassault Rafale, and the various members of the advanced Flanker family, particularly the Su-35 and 37. These complement both existing fighters that offer near-parity performance to the F-15 and F-16, such as the MiG-29 and Su-27, and advanced Mirage family, as well as ageing aircraft that, equipped with upgraded avionics and air-to-air missile systems, can still pose a threat, such as the Mirage F-1, MiG-23, MiG-21, F-4, and F-5. Sales prospects for each of them are quite good, as are upgrade programs for earlier aircraft. A 1995 Rand study examining the Eurofighter, Gripen, and Rafale predicted:

> The new European fighters and future upgrades, armed with new-generation munitions currently under development, are likely to be highly competitive in overall capabilities with existing US fighters and their future variants. We believe that all three new European fighters will be fully developed and procured in significant numbers. The new fighters are likely to be sold outside of Europe because (1) the participating governments and contractors appear to be strongly committed to promoting foreign sales; (2) the fighters are likely to be priced competitively with US aircraft; (3) the Europeans can be expected to place fewer restrictions on technology transfer and provide other economic incentives; and (4) a worldwide demand for new fighters exists.[27]

Such, indeed, has happened; as for the advanced Flanker, this formidable warplane has already been exported to the People's Republic of China, as well as other countries.

These comments are not offered in the sense of criticising countries for quite logically pursuing their own aviation developments and market goals. Rather, it is to highlight a concern: the threats that we all face in the future are likely to involve products not only of our former adversary, the former Soviet Union, but rather from our friends and economic partners. The example I would offer, once again, is the Falklands, and also the Gulf War. In the Falklands, the British task force did not face a single 'red' threat. But it faced American Skyhawks armed with American bombs, French Etendards with Exocet missiles, British-built Canberras, French Mirages, and some Israeli-modified Mirages, as well as a plethora of friendly SAMs. In the Gulf War, coalition airmen shot down Iraqi-flown Mirage F-1 fighters and Swiss-built trainers, and confronted Roland and I-HAWK SAMs. Surface forces faced the possibility of being targeted by French AS-30L laser-guided missiles, Chinese Silkworms, and possibly Exocets: in short, not just the products of Soviet design bureaus.

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27 Mark Lorell, et al, *The Gray Threat: Assessing the Next-Generation European Fighters,* Rand, Santa Monica, 1995, p 65.

Is this significant? Yes, because in an era of declining force structure, America and its allies are more dependent than ever upon using technology for asymmetric leverage. If the qualitative edge enjoyed by the US and its allies is eroded by foes who are not only quantitatively superior – as a niche competitor in a region may well be when confronting a responding superpower and/or coalition – but possibly at qualitative parity or even superiority, then the unbroken overwhelming success of recent interventions is likely become a thing of the past very quickly.

**Surface-to-Air Missiles**

It is somewhat ironic that when most people think of control of the air, they think exclusively in terms of fighter aircraft. In fact, as demonstrated earlier, in recent conflicts, the surface-to-air missile has proven a far more profound threat. Taken together, the fighter and the SAM, when coupled to a responsive integrated command and control system, offer a profound challenge to an attacker. For years the currency among threat regions confronting the West was the ageing SA-2 of U-2 and Vietnam fame. After 1973, it was the SA-6. Today and for the future it is the SA-10 or SA-12 equivalent system. The possible introduction of the SA-10 into Cyprus in 1998 led to a sharp increase in tension between Turkey and Greece; Turkey clearly realised how such as system would compromise its ability to operate in the region. The spectre of the SA-10/12 and the advanced Flanker haunted Kosovo operations. After the war, the USAFE commander, General John Jumper, remarked that his greatest fear, as well as that of the theatre CINC, General Wesley Clark, was:

> ... that somehow Mr Milosevic would find a way to float an SA-10 or SA-12 up the Danube River, put it together and bring it to bear as a part of this conflict. If that had happened it would have profoundly changed the balance of the threat and our ability to maintain air superiority. Likewise, the existence of modern generations of fighters – Su-35s and their equivalents that are available today – would have had a profound impact on the balance that was so heavily tilted in our favour.[28]

In the future, the SA-10, and systems like it, can be expected to proliferate in crisis regions. The computer revolution, with the doubling of computer power every 18 months and the changing of machine architectures and processes only a little longer than this, poses its own challenges, for it permits the continuous improvement and updating of systems via software and processing capabilities to a point where countering them becomes increasingly difficult. Options exist for the defeat of such systems, but it will not be easy, nor readily accomplished unless – once again – appropriate technology investment and acquisition strategies are pursued.

**Missiles**

Missiles of all kinds are increasingly important in warfare. The so-called 'UAV revolution' in fact is one already exemplified by missile development. A modern

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[28] Transcript of statement by General Jumper at the colloquy 'Operation Allied Force: Strategy, Execution, Implications', The Eaker Institute for Aerospace Concepts, Washington DC, 16 August 1999.

missile such as the AMRAAM is, compared to first-generation missiles such as the Sparrow III, really a little robotic kamikaze, capable of tremendous precision engagement. After disappointment in Vietnam, the lethality of the modern air-to-air missile was highlighted by combat over the Falklands, where 24 of 27 AIM-9L Sidewinders hit their targets (a hit rate of 89 per cent), destroying 19 Argentine aircraft.[29] Since that time, a variety of generational developments and new starts have led to missile families which increasingly compromise the ability of conventional, non-stealthy aircraft to operate safely.

But the threat is not limited to the air-to-air arena. The access-denial missile, for example the anti-shipping missile, or the theatre ballistic missile carrying dispensable munitions and cued by satellite-based navigation technology, are two other profound threats, as are the cruise missile successors to the first generation V-1 and the contemporaneous Tomahawk. Whether in World War II, the Falklands, the Mediterranean or the Gulf, ships have proven terribly vulnerable to the aerial attacker. An access strategy based in large measure on control and transit of the sea – particularly maritime choke points – risks horrific failure unless that strategy is partnered with an appropriate degree of air domination. Post-Falklands British maritime doctrine recognises this, tellingly warning that 'The minimal requirement for a successful [maritime] operation is a favourable air situation. Air superiority will be a requirement for sea control where a robust challenge from the air is possible. Air supremacy is a necessary precondition of command of the sea.'[30]

**Information Warfare**

Information has always been of significance to military forces. In today's military, it becomes a new form of electron-based lifeblood, a vital form of logistics moving at the speed of light. Information superiority is one of announced core competencies of the United States Air Force. Through systems such as AWACS, JSTARS, space-based capabilities, UAVs, the U-2, and Rivet Joint, the Air Force has traditionally furnished the United States and its coalition partners with the bulk of so-called C4ISR (command, control, communications, computers, intelligence, surveillance, reconnaissance) leverage and asymmetry enjoyed over the previous half-century.[31] Joseph S. Nye, Jr, and Admiral William A. Owens have written that:

> Knowledge more than ever before, is power. The one country that can best lead the information revolution will be more powerful than any other ... Fusing and processing information – making sense of the vast amount of data that can be gathered – will give US forces what is called dominant battlespace knowledge, a wide asymmetry between what Americans and opponents know. With that, the United States will be able to prevail

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29 Ray Whitford, 'Fundamentals of Fighter Design - Armament & Tactics', *Air International*, Vol 54, No 3, March 1998, p 174.

30 Royal Navy, *Fundamentals of British Maritime Doctrine*, BR 1806 (1995), p 68.

31 For a discussion of this see C. Edwards Peartree, C. Kenneth Allard, and Carl O'Berry, 'Information Superiority', in Daniel Gouré and Christopher M. Szara (Eds), *Air and Space Power in the New Millennium*, The Center for Strategic and International Studies in cooperation with VII Inc, Washington DC, 1997, pp 117–131.

> militarily, whether the arena is a triple-canopy jungle, an urban area, or similar to DESERT STORM.[32]

But despite this optimistic assessment, information warfare as a recognised specialty within the aerospace warfare environment is still in the formative stages. As a result, combat experiences from DESERT STORM through ALLIED FORCE have offered mixed results. Exchanging and integrating information is a serious challenge, and though the United States and its coalition partners had undoubted information superiority over both Saddam Hussein and Slobodan Milosevic, this was an area where they could play more on an equal footing with the United States. For example, consider the largely successful Iraqi propaganda effort after the Al Firdos bunker strike or the back-and-forth public relations war over 'collateral damage' issues between the NATO alliance and Yugoslavia.

Furthermore, with opportunity comes risk, as well. The very information systems that make military operations easier become themselves a target for counteraction.[33] Over time, predicted threats to the national information infrastructure (NII) – either through hardware corruption, 'insider' abuse, or external 'hacking' – have ranged from nuisance attacks to attacks on individuals' financial and medical records, the banking system, corporations, and on up to overt attacks on military targets.[34] Scenario explorations have found little potential disruption of military operations, despite far greater impact upon civilian life.[35] Nevertheless, the number of 'hacking' events (80–100 per day against the Department of Defense), the rapid proliferation of advanced knowledge sharing and communications systems throughout the world, and the linking of some hackers to disruptive causes and nations is disconcerting.

The heavily space-dependent nature of information transfer and utilisation, and the vulnerabilities that might accrue from an attack on space-based information systems, led the US Secretary of Defense, William Cohen, to issue a policy memo in July 1999. It stated that: 'Purposeful interference with US space systems will be viewed as an infringement on our sovereign rights. The US may take all appropriate self-defense measures, including, if directed by the National Command Authorities, the use of force, to respond to such an infringement of our rights ... Space power is as important to the nation as land, sea and air power'.[36] Not surprisingly, given this environment and interest, one commentator has noted, 'Ambiguity is inherent in this new form of war, but that must not suggest to our adversaries that they might get a free shot'.[37]

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32 Nye and Owens, 'America's Information Edge', *Foreign Affairs*, Vol 75, No 2, March–April 1996, pp 20, 23–4. See also Thomas G. Mahnken, 'War in the Information Age', *Joint Force Quarterly*, No 10, Winter 1995-6, pp 39–43.

33 For example, as this is being written (4 May 2000), computers in the Federal Government are being bombarded with a virus called 'ILOVEYOU' (!).

34 For a discussion of information warfare, see Martin C. Libicki, *Defending Cyberspace and Other Metaphors*, The Center for Advanced Concepts and Technology, National Defense University, Washington DC, 1997.

35 See Roger Molander, Andrew Riddle, and Peter Wilson, *Strategic Information Warfare: A New Face of War*, Rand, Santa Monica, 1996.

36 John Donnelly, 'Cohen: Attack on US Satellite is Attack on United States', *Defence Week*, 26 July 1999, p 2. See also Jeffrey L. Caton, 'Joint Warfare and Military Dependence on Space', *Joint Force Quarterly*, No 10, Winter 1995–6, pp 48–53.

37 John T. Correll, 'The Information Time Bomb', *Air Force Magazine*, May 2000.

**Special Operations**

In January 1981, Macheteros Puerto Rican terrorists infiltrated the Muñiz Air National Guard Base at Verde, Puerto Rico. They planted bombs that destroyed nine fighters and damaged two others, for a total monetary loss of US$45 million (over US$88 million in 1999 monies).[38] This attack, on American soil, is but a single isolated example from a long history of special operations forces or disaffected groups entering airfields and attacking and destroying aircraft and facilities. During the Second World War, the British Long-Range Desert Group (LRDG) and the Special Air and Boat Services (SAS and SBS) routinely raided German and Italian airfields in the Western Desert, achieving results that were remarkable: over two years they destroyed nearly 400 Axis airplanes. One raid in July 1942 resulted in no less than 37 aircraft destroyed. During the Vietnam War, communist infiltrators and artillery and rocket attacks took a heavy toll of aircraft and helicopters. In the course of 485 attacks, fully 99 aircraft were destroyed in these attacks, and another 1,170 damaged.[39] Since that time, airfield raids have featured in numerous small wars, but particularly in the Falklands and Afghanistan.

Given this history, it is prudent to perceive the enemy special operator as a clear threat to air power projection. Such thinking lay behind some of the organisational planning that went into the USAF Air Staff 'Air Legion' concept of the late 1980s that anticipated (in some ways) the Composite Wing notion of the early 1990s: namely that in the era of *Spetsnaz*, it made sense not to concentrate particular and unique kinds of power-projection assets at any one base but, rather, to spread them across an array of bases and locales.[40]

The tremendous proliferation of easily available stand-off weaponry, for example light portable missile systems, mortars, heavy calibre sniper rifles, even radio-controlled model airplane technology – all pose a potential asymmetric threat to air power projectors. Equally – and not surprisingly – they hold a tremendous attraction for those who desire or need to negate air power, but who lack the ability to directly confront their opponents in the air. Put another way, Operation ALLIED FORCE could have been a very different kind of conflict had NATO's bases, particularly Aviano, but also including those that supported space-based information operations, come under attack. That they were not should not offer false comfort for those air commanders envisioning the challenges of future warfare, whether on the Korean peninsula, back to the Balkans, or elsewhere, even within CONUS. Indeed, one 'senior USAF planner in Korea' remarked to Rand researchers in the mid-1990s that 'the war for air superiority in the next Korean war could well be decided in the allied rear area'.[41]

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38 Alan Vick, *Snakes in the Eagle's Nest: A History of Ground Attacks on Air Bases,* Rand, Santa Monica, 1995, p 154.

39 Vick, *Snakes in the Eagle's Nest,* pp 37, 68–69.

40 The 'Air Legion' concept was the brainchild of then Lieutenant Colonel John Piazza, working within AF/XO. Personal recollection. The example offered at the time was the dependency of USAFE upon Bitburg and Soesterberg air bases for F-15Cs, critical to winning air supremacy in any Warsaw Pact-NATO confrontation.

41 David A. Shlapak and Alan Vick, *Check Six Begins on the Ground: Responding to the Evolving Ground Threat to US Air Force Bases,* Rand, Santa Monica, 1995, p 43.

## URBAN CONFLICT: AN 'OLD-NEW' ASYMMETRY?

One topic that has received particular and detailed attention in recent times is the problem of conflict within urban areas. At roughly ten year intervals, major urban conflicts have occurred since the beginning of the Second World War: Stalingrad, Manila, Warsaw, and Berlin in the 1940s, Algiers in the 1950s, Hue in the 1960s, Beirut in the late 1970s and early 1980s, and Sarajevo, Monrovia, Mogadishu, Kigali, and Grozny in the 1990s. Given the fearsome aspect of virtually all of this conflicts, it is understandable that urban warfare, for some, holds the spectre of a kind of asymmetric warfare where the traditional technological leverage employed by Western forces – particularly aerospace power – may not be applicable or workable. In the late 1990s, the United States Marine Corps, at the behest of its energetic commandant, General Charles C. Krulak, focused on the challenge of the 'three block war', embracing a vision of future conflict deep within urban areas and creating a training program called 'Urban Warrior'.[42] In this future vision, Marines might well have to deploy from the sea into coastal urban areas to conduct, simultaneously, humanitarian operations, peace enforcement, and outright combat, all within the space of a mile or two.

Recalling the near-total massacre of Quintilius Varus' three well-equipped Legions by Arminius' canny (if primitive) German tribesmen in the Battle of Teutoberger Wald[43] in 9 AD, Krulak stated:

> By 2010 you're going to have metropolitan areas building up all along the coasts, cities with seven million people or more. Why are those cities so close to the coast so important? Because they are our forest. If there is an enemy out there that wants to make a difference, he can only make a difference by getting us into a complex, chaotic, deadly environment that negates our technology, negates our strength and capitalises on their strengths. That place is called the cities.[44]

Certainly cities pose serious challenges to military operators, even if one is willing to ignore the ethical issues and simply use overwhelming and indiscriminate firepower to blast them apart – as the Russians have done twice within the last decade in Grozny. Cities in developing countries are exploding in growth, with a consequent rise in

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42 Gary Anderson, 'The Future of the Urban Warrior', *Washington Times*, 30 October 1998. Urban Warrior has involved highly publicised exercises in Chicago and other urban areas, with troops crawling along in sewers and other underground urban support systems. Some students of American defence policy, echoing the maritime doctrine of 'Forward - From the Sea' have dubbed this variant 'Forward - From the Sea and Into the Sewers'.

43 In fact, the defeat of Varus was far less due to the inadequacies of technology - after all, the German tribes used the very same kind of weapons as the Romans - than to Varus' sadly inept leadership: he was, by training, an attorney, not a warfighter. For greater details see J.F.C. Fuller, *A Military History of the Western World: From the Earliest Times to the Battle of Lepanto*, Funk & Wagnalls, New York, pp 248–252.

44 Speech by General Charles C. Krulak, Commandant, US Marine Corps, posted on the Internet by Army Training and Doctrine Command, HQ TRADOC ODCSIM (ATIM-1), Ft. Monroe, VA, 27 February 1998. See also John W. Jandora, 'Threat Parameters for Operations Other than War', in *Parameters*, Vol 25, No 1, Spring 1995, pp 55–67.

disease (particularly AIDS and tuberculosis), crime, inefficiency, and an increasingly disaffected population.

At the beginning of the 20th century, only five per cent of the world's population lived in cities. Today, at the beginning of the 21st, the figure is 45 per cent, representing 2.5 billion people. Over the same time, cities have grown from accumulations of 100,000 citizens to communities of upwards of 15 million.[45] At the beginning of the 20th century, there were two 'mega-cities': London and New York. Today there are 24, primarily in the developing countries of the Third World. The US population density is 74 people per square mile; in contrast, 43 countries have population densities greater than 500 per square mile, and seven of these have densities greater than 2,000 per square mile. Such densities mean that cities become dangerous 'vectors' for sweeping diseases, in part because of both urbanisation and global migration. The dangers to far-flung societies, in the era of global jet transportation where the furthermost countries are but hours away, is easily imagined, particularly when one contemplates a rapid burn-through ailment such as Ebola virus.[46]

But there is arguably an even more serious danger to public order. Eugene Linden has written:

> Disease, squalor, hopelessness, stress, and the decline of traditional cultural constraints in the atomised contemporary city conspire to aggravate yet another health hazard: violence. Homicides and other violence accounted for 86 per cent of all deaths among teenage boys in São Paulo ... Karachi, with roughly four million unemployed, many of them teens, has an endless supply of recruits for its ethnic militias and drive-by assassination teams. 'You have a lot of people sitting around idly, and a lot of guns,' says a World Bank official. 'All you need is a little ideology and you can get your own army.' Finally there is war.[47]

## SO, WHAT IS TO BE DONE? SOME SUGGESTIONS

Aerospace warfare may not be totally effective across the entire range of conflict possibilities. No form of combat power projection is. But despite all the interest in so-called asymmetric strategies that are perceived to limit aerospace power, attack through the medium of flight, assisted by space-based assets, still represents the most desirable and reasonably accomplishable form of power projection today. It is particularly appropriate for this era of increasing intolerance to the kinds of casualty levels that have characterised previous conflict, and this, as a result, has led to some students of military affairs, notably Edward Luttwak and Jeffery Record, calling for a reapportionment of defence funding to forces that are actually usable; ie, America's

45 Eugene Linden, 'The Exploding Cities of the Developing World', *Foreign Affairs*, Vol 75, No 1, January–February 1996, pp 53–4.

46 Laurie Garrett, 'The Return of Infectious Disease', *Foreign Affairs*, Vol 75, No 1, January–February 1996, pp 71–2.

47 Linden, 'The Exploding Cities of the Developing World', pp 57–8.

joint Service aerospace power team.[48] In sum, even if perhaps challenged, for a variety of reasons, the asymmetric advantage of aerospace power nevertheless remains unconstrained by attempted counter-asymmetric strategies.

The key to future access will remain control – absolute control – of the air. And given the nature of the fighter and surface-to-air threat environment now proliferating in potential crisis regions, it is imperative that the responsible nations of the world maintain adequate forces to meet these threats. Not all can fund or fly stealth fighters. But all can learn to work together and master the principles of air warfare which, now almost a century old, still hold that the first and most important role for an air force is control of the air. For the United States, the key to future regional access, in the eyes of the US Air Force, is using the leverage of aerospace power spearheaded by the F-22, a true stealth fighter. By using stealth and supersonic cruising, the F-22 promises to negate the advantages of all known or contemplated future fighters, as well as SA-10/12 or better surface-to-air missile systems. The combination of stealth and speed effectively shrinks the opponent's detection and decision time, missile fly-out times, and the volume of airspace actually 'held hostage' by a surface-to-air missile system. Entering hostile airspace and avoiding the threats is then akin to stepping around puddles of water, rather than having to wade through them.

With control of the air, given historical military experience, all other combat tasks, whether on the ground or in the air, can be expected to go that much smoother. Depending on what is required, this is where a variety of capabilities then come into play, including stealth and precision strike assets, such as the F-117 and the B-2; more conventional attackers such as the F-15E, F-16, B-1, B-52, and F-18; air mobility forces, built around the C-141, C-5, C-17, and C-130; refuelling forces, using the venerable KC-135 and the KC-10; space-based and atmospheric ISR assets, such as the U-2, the Predator, and, soon, the Global Hawk; and special operations forces, with a variety of capabilities and systems typified by the SOF variants of the C-130 family, the MH-53 and MH-60 helicopters, and the next-generation CV-22 Osprey.

Arguably even more importantly is how the United States is packaging its air power projection capabilities. As drawdowns have occurred, nevertheless important transformations in American combat power have taken place. The carrier air wing has become more of a precision-weapon employment force, as Tomcats have become 'Bombcats'; advanced variants of Army attack aviation systems, particularly the AH-64D Longbow Apache are entering service; and for all Services (particularly the United States Air Force), the common currency of power projection is the precision weapon. If it was the laser-guided bomb a decade ago, today it is the GPS-cued JDAM, the 'star turn' of the air war over Serbia.

But the most distinctive change in American air power projection has been the emergence of the Expeditionary Air Force, and the ten-wing Air Expeditionary Force structure. The EAF/AEF construct, already successfully demonstrated and introduced into operational practice, capitalises upon the core competencies of the Air Force – air and space superiority, precision engagement, information superiority, global attack,

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48 See Edward N. Luttwak, 'A Post-Heroic Military Policy', in *Foreign Affairs*, Vol 75, No 4, July–August 1996, pp 33–44, esp p 42; Jeffrey Record, 'If US Relies on Air Power, It Should Pay for It', *Defence Week*, 1 May 2000, p 5.

rapid global mobility, and agile combat support – to provide a balanced mix of force capabilities to meet contingencies across the range of anticipated conflict and crisis scenarios in the convoluted world of the 21st century.

A vital necessity for all American power projection is rapid air mobility. To this degree, given the kind of crises we face, and with the experience of vehicle-heavy Task Force Hawk in the recent past, it is obvious that some change is required in assessing the true nature of combat power projection. Is it, as many have previously thought, the airlifter carrying a tank, or is it something else: the airlifter carrying a theatre-range missile system such as MLRS/ATACMS, or three Longbow Apaches, or JDAMS to be handed off to strike assets in theatre? We are, it can be argued, well beyond the point where crisis response needs to be seen in terms of hauling tracked vehicles having the ability to project power over a distance of a few thousand metres.

Likewise, with aerospace power projection so absolutely critical to coalition success, the sanctity of air power projection centres assumes critical importance. Put another way: if an opponent attacks a base camp and destroys 20 vehicles, an army is inconvenienced. If that same opponent attacks an air base and destroys 20 F-15Es or 20 F-117s, a theatre campaign is perhaps fatally disrupted. In the new model of war, it will be increasingly incumbent upon surface forces to assume responsibility for the ground security of air bases, both those of air forces and the organic air power projection forces inherent to armies and navies. It is, indeed, in the interest of surface forces to do so, for the absence or pre-emption of air power can only mean – as the 20th century taught all too well – increased misery and loss for those on the ground.

The attempt by enemy forces to deploy weapons of mass destruction or to create such dense air defence networks as to be able to prosecute 'SAMbushes' argues powerfully for faster weapons and smaller smart munitions. Hypersonic weapon approaches – for example, developing either air-launched air-breathing or rocket-boosted waverider hypersonic shapes possessing both stealth and speed – offers tremendous promise (if some technical challenge), particularly for the fast, long-range Mach 6–8, 350–650 mile engagement scenario.

Information operations will demand continuous upgrading and advancement, particularly as the pace of computer development remains unabated, with even the notion of 'quantum' computers not seeming as much the stuff of science fiction as once thought. Easy access to space, perhaps using a variety of new space launch architectures involving expendable boosters and reusable unmanned space transit vehicles, promises to make space operations more practicable than at any previous time. Other forms of information warfare offer the possibility of turning the population of rogue regimes against their leaders, disrupting internal security operations, and the like – but the threat of counteraction is one that will demand the most careful thought and doctrine.

The challenges of urban warfare are unlikely to prove as limiting as critics fear, for a number of reasons. First, it is by no means clear that there is a defined military necessity for operating within a city against an urban foe. Early results of the Urban Warrior exercise effort led one urban warfare partisan to conclude: 'There is good reason why western militaries have traditionally shunned fighting in cities; it is hard. That fact combined with a cunning and street-wise enemy can make for a devilishly

difficult environment. But we are also finding that it is an environment that we can master if we put our minds to it'.[49] The author is reminded of a story regarding an inexperienced test pilot in the Second World War doing an initial evaluation of a new design. The plane had abysmal handling characteristics, but the pilot chose to learn to live with it, eventually becoming quite good. He was so good that when other Service pilots began to evaluate the plane, they immediately discovered that it was, in pilot parlance, a 'dog'. Months had been lost because he had failed to appreciate that his role was not to learn to live with deficiencies (a bad flight control system), but to overcome them (force a change in design). One question that might be asked of all those advocating block-by-block urban warfare is: 'Why?' What tremendous military opportunities have been lost, what tremendous casualties have been experienced because Western militaries have elected not to fight in cities in the past? Is it just possible that Frederick the Great (whose stature adorns many a war college, including the US Army War College) was correct when he stated 'So many men are lost in the attacks on villages that I have vowed never to undertake them'.[50]

Secondly, air power has worked in urban environments, is working today, and will work with even greater utility in the future. The advent of the precision munition, and the development of specialised air support systems such as the helicopter gunship have already enabled air power forces to operate in and around urban environments to good effect. Air power operates on the periphery of urban areas with great facility, controlling access, observing, striking, and supplying, to just offer a few examples. But in the Gulf War of 1991 (and in the Balkans since) the technological advantages of precision identification and targeting enabled decision-makers to authorise strikes directly into the heart of a heavily urbanised enemy capital, without attendant mass casualties. This is urban warfare.

So what is an urban role for aerospace power? A perceptive 1998 Rand study concluded that:

> aerospace forces can deter or compel an end to international aggression directed against cities by threatening strikes against enemy centres of gravity ... detect and destroy enemy ground forces as they move through open space to get to friendly cities ... and finally [they] can support friendly ground forces engaged in urban combat by attacking enemy command centres, lines of communication, supply depots and other supporting infrastructure.[51]

As Alan Vick and others have noted, air power already functioned in the second and third categories listed above during the Battle of Khafji during the Gulf War. There, after a small advance party of Iraqi forces had reached Khafji, coalition air attacks thwarted Saddam Hussein's effort to build up the force and thus prematurely trigger the ground war by creating an urban conflict nightmare.[52]

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49 Anderson, 'The Future of the Urban Warrior'.

50 Quoted in *Aerospace Power Journal*, Vol 14, No 1, Spring 2000, p 11.

51 White Paper on urban warfare and aerospace power presented to the Air Force Vice Chief of Staff. I am indebted to Alan Vick of the Rand Corporation for making it available to me.

52 See Major Daniel R. Clevenger, *Battle of Khafji: Air Power Effectiveness in the Desert, Vol 1*, Forces Application Division, Air Force Studies and Analyses Agency, Washington DC, July 1996.

Anticipating air power's role in urban warfare requires a return to the recognition that social organisations are complex, multifaceted, and have many interlocking nodalities. They are truly, as one special operator has noted, a 'systems of systems'. In an assessment of various urban models, Lieutenant General Norton Schwartz and Colonel Robert B. Stephan took note of one model, whereby cities are viewed as:

> ... made up of various key nodes that are normally archived and susceptible to detailed effects-based targeting analysis across three dimensions. By making these key nodes the operational foci of the joint campaign, we can apply our asymmetrical, joint strengths against the adversary's key centres of gravity without having to close with him in predictably costly force-on-force confrontations. By using this approach, one may control an adversary without necessarily introducing a large ground-combat force, thus minimising casualties while achieving the desired effect.[53]

This school of thought, the authors concluded, was the most reasonable, for it 'looks to shape and control an adversary's behaviour by achieving operational effects that may not include controlling territory at all. In the end, this approach offers the Joint Force Commander a greater number of achievable operational-level course of action in the urban environments we are most likely to face.'

A few words in closing need to be offered regarding changes in the nature of aerospace technology and the impact that these changes are likely to have – or perhaps continue to have, in the case of some of them – with regard to future war. It is worth noting that at the beginning of the 19th century, the speed of a horse-drawn cart was about six miles per hour. At the beginning of the 20th, the speed of a locomotive was about 60 mph. At the beginning of the 21st, the speed of a turbojet airliner was about 600 mph. It is not too far-fetched to suppose that the speed of at least some intercontinental passenger 'aerospacecraft' will be 6,000 mph at the beginning of the 22nd century.

I am a product of the aerospace revolution; I was born just after the beginnings of supersonic flight and the turbojet revolution. In contrast, my father was born before the Wrights flew at Kitty Hawk. My parents lived to witness the Space Shuttle and routine access to space. That is how quick the aerospace revolution has been – in a person's lifetime from the high-speed locomotive to the Space Shuttle. We have little idea of how the aerospace revolution will continue to unfold in the 21st century; the history of technological prediction almost always indicates that soothsayers were far too conservative in their estimates, not far too optimistic. But we may posit the following:

- **Stealth** will remain of vital importance in the future and be extended to other aerospace systems, even if counter-stealth technologies bear some fruit. It is the new standard for combat systems.

- **Air mobility aircraft** will become even more refined, probably eventually going to the graceful flying wing 'spanloader' concepts that occupy the attention of so many aerospace artists.

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53 Lieutenant General Norton S. Schwartz and Colonel Robert B. Stephan, 'Don't Go Downtown Without Us: The Role of Aerospace Power in Joint Urban Operations', *Aerospace Power Journal* Vol 14, No 1, Spring 2000, pp 3–11, quote from p 5.

- **Hypersonic vehicles** will eventually operate routinely in the transatmospheric environment, but their development will be lengthier than expected.

- **Precision weapons** will continue to proliferate, getting smaller and cheaper. Non-explosive kinetic energy shapes will prove extremely valuable for use in situations where collateral damage is a key concern. Specialised hypersonic weapons will be derived for counter-C2 and counter-WMD roles, as well as for long-range air and surface control against high-value targets.

- **Micro-UAV** technologies will revolutionise both our capabilities – and the threats that we face – for situational awareness, information dominance, and combat operations.

- **Space** will assume more of the burden of ISR operations, with systems such as AWACS and JSTARS eventually migrating to above the atmosphere. Eventually, space will be weaponised as directed energy weapons (first deployed within the atmosphere) and advanced kinetic kill vehicles themselves are launched into orbit, as part of a new era in the counter-WMD/TBM struggle.[54]

In closing, I again wish to acknowledge with gratitude the invitation of the conference organisers for me to participate in this stimulating interchange. The issues we are dealing with are significant and far-reaching, and it is an honour to have been asked to share my thoughts on them with you all. Thank you very much.

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## *DISCUSSION*

*Mr Peter La Franchi (Journalist):* What you have outlined is a very good picture of how the United States intends to approach the air power equation for the next few decades. Could you quickly walk us through how you would see the relevance of these concepts to nations that simply cannot afford this. For instance, how would the concepts of air power that you've outlined to us here in the directions that air power is taking be relevant to someone in, say, New Zealand?

*Dr Hallion:* I think when we take a look across the field of aerospace development, we find that a number of these areas, particularly in the information warfare area, are ones in which a lot of countries can play, including countries that we would think of as being smaller countries and not having a traditional aerospace industry, robust enough to play in a major venture. Now, if we are looking at full size, all-up hypersonic vehicle

54 For some stimulating thinking on these topics, see Lieutenant Colonel Thomas D. Bell, *Command and Employment of Space Power: Doctrine for the Asymmetric Technology of the 21st Century*, Research Report AU/AWC/RWP011/97-04, Air War College, Maxwell AFB, April 1997; Colonel John Warden III, USAF (Ret'd) et al, *The New American Security Force*, a report submitted for the CSAF National Defense Review, Synergy, Inc, Washington DC, 19 December 1997.

design, or something like that, yes I think your point is well taken there. But actually if we take a look at the weapon technologies – you know the development of missile technology, the development of guidance technologies, the packaging of these into power projection systems, UAVs, cruise missiles, air defence systems – I think that is an area where many, many countries can play. The other thing we're seeing is that as aerospace development and technology becomes more complex, we are seeing a lot more partnering among nations. Consider for example the Airbus experience, which has been very, very successful in Europe, where a bunch of players have got together and they are now taking on quite successfully the established giant Boeing. I would see that we would be working this area as well, so I think there's more potentiality for coalition players to engage in these leading edge kinds of warfare than perhaps at first glance would seem to be the case.

*Brigadier Jim Wallace (Army):* I enjoyed your talk very much and particularly I thought you were very correct to point out to us that warfare is really the history of asymmetric threats and situations. However, nonetheless, when we are talking about an asymmetric threat in this subject, I would think that we are mainly talking about the conventional versus the unconventional, and that perhaps what we are really looking for is what is the role of air power in a situation where your postulating a conventional force against someone who's operating unconventionally – that's one sense. The second sense is that, while I appreciate that Frederick the Great might not want to attack towns, the fact is if the enemy makes the town the centre of gravity, and if he's smart he will if he knows you don't want to attack them, then surely in the end you have to attack towns and I think the Russians have certainly found that out to their peril. So it seems to me that to dismiss that by saying that we have instances with the use of helicopters by police in our own towns to prove that we can operate air power in towns is really a little bit too dismissive. I think that the example of Mogadishu, which was a very underdeveloped urban area, certainly in a vertical sense and in a scale sense, and yet proved very lethal to the operation of air power, is to dismiss the asymmetric threat and the likelihood of someone operating in an asymmetric way too readily. Could I ask you to comment on that?

*Dr Hallion:* By all means. First of all, looking at what I said earlier in my talk I would argue that perhaps we make too much of this conventional/unconventional way of looking at warfare. Warfare has been, I think, traditionally asymmetrical among opponents; you seek to put your strength against the enemy weakness. From either standpoint one sees the opponent either operating conventionally or unconventionally – it's one of those dualistic types of situations. As far as the comment on urban warfare, all military forces possess particular strengths and attributes. The thing that I find kind of amusing looking at air power is that sometimes in this argument on urban warfare, urban warfare is thrown up as an example of why air power for some reason has some major deficiency across the whole range of military operations. I know of no other form of military power that is held at the high standards that air power is. I think actually that air power in an urban environment has worked very well, and I would point to the example of law enforcement helicopters for years, and actually I would point to Mogadishu as an example of where air power worked well until people started using it badly, and here's what I would say. When the marines first came into Mogadishu, they decided to employ power at a distance against the threats that they were facing and there was a relatively well-defined mission that they were trying to

fulfil. It was humanitarian relief. So they decided to isolate the people who needed help in care facilities and camps, away from the 'Technicals' who were harassing them or otherwise trying to make things miserable. Then the marines controlled the 'Technicals' by using snipers on the ground and using active helicopter gunship patrols aloft, and the 'Technicals' very quickly learned not to fool with the marines, after they had a number of their people killed by snipers and one day a 'Technical' very foolishly tried to operate a 23mm cannon on the back of a truck and was blown away by a missile. They got the message very quickly. There were gunships present, fixed-wing gunships in theatre and there was a helicopter carrier group offshore. Now as time went on, you had mission creep and you went from humanitarian relief to stabilisation, to then trying to restore order in the country, and along the way what happened? Air power was taken out of the equation. The carrier group went away, the fixed-wing gunships went away. Meantime, the demand for the kinds of operations where they actually would have been most valuable was actually racheting up. So when you finally had the ultimate foolishness, which was to take people who had tremendous technical advantages, strip them of those technical advantages and put them deep in the heart of Mogadishu where they were facing a qualitative parody with their opponents and a quantitative inferiority in view of the large numbers of opponents, the kind of support systems that were actually there to help them out as postwar analysis indicated, particularly aerial fire support systems, simply weren't around. That was not a case of where air power failed to work; air power was taken out of the fight.

# AEROSPACE POWER
# THE MILITARY USE OF SPACE

AIR VICE-MARSHAL PETER NICHOLSON

## INTRODUCTION

In the information age, the ability to collect, filter, transmit and analyse information, convert it to knowledge and then act upon it more rapidly than the opposition, more than ever provides a critical edge in both economic and military power. Gaining and maintaining this edge – the 'knowledge edge' – is becoming increasingly dependent on space-based capabilities. As this trend continues, effective space-based capabilities will become crucial instruments of national power. Therefore, it is critical to the ADF's role of protecting Australia's security and national interests that Defence is well positioned to successfully exploit the militarisation of space. To do so, the ADF needs to develop a coordinated, well-informed and coherent approach to developing its space-based capabilities.

This paper first discusses the military importance of space. It then examines the ADF's past and present utilisation of space-based capabilities and extant projects. The paper then examines some of the technological trends in the evolution of space-based capabilities and how these can both enhance our military capabilities while also creating new threats and vulnerabilities. It then discusses a range of space policies the ADF needs to develop to enhance the advantages and mitigate the risks of the militarisation of space. Finally, it proposes that the ADF form a 'space office' to manage the complex task of developing and implementing these policies to ensure that the militarisation of space will enhance Australia's security.

## THE MILITARY IMPORTANCE OF SPACE

Space-based capabilities are rapidly growing in importance for both the military and economic elements of national power. Commercial space-related industries are currently growing at a rate of 20 per cent per annum and are expected to maintain high growth rates in the foreseeable future. As commercial space-related developments proliferate, the opportunity for military forces to utilise and adapt commercial developments as enablers for space-based military operations will also rapidly expand. The use of space-based capabilities for the provision of warfighting information will allow a given force structure to be used more effectively. In the future, it is likely that a substantial portion of warfighting information will come from space-based sensors and that the majority of it will pass through space at some point in time before reaching end users. The critical role of space will make it a cornerstone of the revolution in military affairs as both a source of data and a medium for the information underlying network-enabled warfare.

Perhaps the most fundamental motive for developing a space-based military capability is that it allows military forces to exploit the new high-ground advantage. In military operations throughout history, it has been demonstrated that in order to gain advantage over an adversary, one should secure the 'high-ground'. Since the advent of air power, military forces have exploited the high-ground advantage provided by airborne platforms. Initially, these platforms were used to monitor enemy positions in order to gather intelligence on intentions and capabilities and to detect emerging threats across approaches to sovereign territory. However, as time passed, the high-ground advantage was increasingly used for offensive deployment as well as the traditional surveillance and reconnaissance activities.

Since the 1950s, the high-ground has moved out of the earth's atmosphere and into space. The capabilities that have since been developed provide military commanders with the ability to identify and analyse adversaries' capabilities with an increasing level of detail over a wider area of coverage. Advances in space-based communications systems have allowed for this information to be communicated to deployed forces in near real-time and independent of terrestrial communications infrastructure.

This last issue is particularly important in the Australian context. Due to our large land-mass and very small but concentrated population distribution, much of our continent has little or no terrestrial communications infrastructure. Space-based communications services will provide the ADF with a level of communications coverage currently not available with terrestrial systems.

Of course, as military and economic power becomes more dependent on space-based capabilities the potential for attacks on these capabilities will increase. Attacks on space-based capabilities currently present an attractive, low-cost option for an adversary to inflict significant damage to both economic and military strengths at relatively lower risk than attacking conventional forces.

In order to ensure that an increased dependence on space does not become a vulnerability, it is important that Australia's freedom to securely utilise space capabilities be maintained and that an ability to deny an enemy the use of space systems be an important consideration in future force development.

## MILITARY APPLICATIONS OF SPACE

As space-based technologies proliferate, the range of military applications of space continues to widen. Broadly, these applications can be categorised into two main areas, support roles and active roles.

### Support Roles

Support roles include both conventional force enhancement as well as indirect activities. The force enhancement roles associated with space-based capabilities are those that enhance the efficiency and effectiveness of military forces. These capabilities include navigation, communications, surveillance, reconnaissance, and

search and rescue. Indirect support roles comprise the functions necessary to deploy and operate space-based capabilities and includes research, acquisition, launch operations and on-orbit operations activities.

**Active Roles**

The active roles associated with space-based capabilities are those that are concerned with direct warfighting activities. They include space-control operations and direct force application.

Space-control operations are those operations that seek to ensure freedom of action in space for one's own forces while denying an enemy the use of space through either satellite defence measures or anti-satellite (ASAT) operations.

There are a variety of satellite defence measures that seek to minimise the vulnerability of space-based capabilities. These include physically 'hardening' satellites or using flexible launch systems, highly inclined and elliptical orbits, stealth technologies, increased levels of manoeuvrability and diversification of assets.

Similarly, there are a wide variety of ASAT capabilities which are capable of executing offensive operations against space-based capabilities from the ground, air and space. Current and planned ASAT capabilities, many of which are asymmetric in nature, include the following:

- **Intercontinental Ballistic Missiles (ICBMs).** Although it is considered to be very inefficient, the use of ICBMs to detonate nuclear warheads in the vicinity of lower-orbit satellites is a very effective ASAT technique.

- **Anti-ballistic Missiles.** Trials have successfully demonstrated the effectiveness of air-launched missiles against space targets. As with ICBMs, this approach is generally inefficient and likely to result in collateral damage.

- **Space Mines.** An emerging capability is the use of pico and micro-satellites, possibly in conjunction with fragmentation warheads, to disable satellites. This approach, if successfully realised, will be more efficient than conventional missile-based technologies.

- **Directed Energy Weapons.** Considerable effort has been expended in relation to ground-based directed energy weapons for ASAT operations. These weapons are designed for operation in both the optical and radio frequency portions of the spectrum.

- **Electronic Warfare.** The use of low-cost commercial-off-the-shelf (COTS) capabilities such as jamming, creates significant opportunities for asymmetric attack against space-based capabilities. This is the cheapest of the ASAT options, although its effectiveness is largely dependent on the satellite design.

Direct force application from space against air, maritime and ground targets is still very much in its infancy. However, if this is successfully developed, it will provide commanders with a formidable capability.

## ADF SPACE HISTORY

Australia's military use of space has evolved considerably since the 1950s when activities first began in this area. Australia's earliest efforts in the military use of space were focussed on intelligence gathering and communications. During the 1960s and 1970s there was considerable reliance on allied support in relation to intelligence collection, while communications capabilities relied largely on the ability of commercial satellite services to connect between fixed facilities.

During the 1980s, increased use was made of military-band satellite communications to support low data rate broadcast and netted voice services for the maritime environment. In this time, use was also made of satellite-based navigation systems to support military operations.

In the 1990s, commercial satellite communications services were increasingly used to support communications in the tactical environment through the use of the Defence Mobile Communications Network, PARAKEET Transportable Earth Stations (TES) and Mobile Off-Shore Terminals (MOST). During this period, there was also a substantial increase in the number of platforms and units that utilised satellite-based navigation systems.

By the late 1990s, the ADF's satellite communications capabilities were further enhanced through the leasing of a dedicated UHF satellite and the procurement of a military payload on the Cable and Wireless Optus C1 (OPTUS C1) satellite. The OPTUS C1 satellite will provide a major increase in ADF satellite communications capabilities and is likely to have a substantial impact on ADF business processes.

## CURRENT ADF SPACE-RELATED ACTIVITIES

Australia's most recent strategic guidance placed considerable emphasis on attaining capabilities that provide the ADF with a 'knowledge-edge'. To achieve this the ADF is already employing a variety of spaced-based systems to enhance its knowledge management capabilities.

For example, since 1972 through the Defense Support Program (DSP), Australia has been participating in the US Ballistic Missile Early Warning Program. Using the Joint Defence Facility Nurrungar and the Relay Ground Station in Alice Springs the DSP gives early warning of ballistic missile launches by detecting infra-red emissions from missile plumes. ADF personnel participate fully in the management and operation of this capability.

In addition, the RAN's Meteorological and Oceanographic (METOC) service is working closely with the Australian Bureau of Meteorology to access commercial meteorological satellites, such as the US National Oceanographic and Atmospheric Administration's (NOAA) satellite and the Japanese Geostationary Meteorological Satellite (GMS) to meet the ADF's meteorological information requirements.

Furthermore, using the Australian Survey and Land Information Group (AUSLIG) and its access to commercial remote sensing data, the Directorate of Strategic Military Geographic Information services the ADF's mapping needs using imagery from NASA's LANDSAT satellite and France's SPOT satellite.

The ADF is also introducing into service a new personal locator beacon complimented by GPS which will utilise the Russian COSPAS and the US SARSAT search and rescue satellites as its primary means of alerting rescue services.

### Theatre Broadcast System

The Theatre Broadcast System is a very good example of an indigenous capability developed to meet Australian requirements. Some very good work has been done to date by DSTO in relation to this capability. The system was operationally deployed in East Timor with excellent results and is currently in the process of being transitioned to a mature capability.

The key features of the system include low cost of capability by leveraging off commercial developments; support to web-based command support systems such as the Joint Command Support System (JCSS); delivery of high bandwidth information products, such as intelligence reports and imagery to multiple users concurrently; and dissemination of video information, such as briefings.

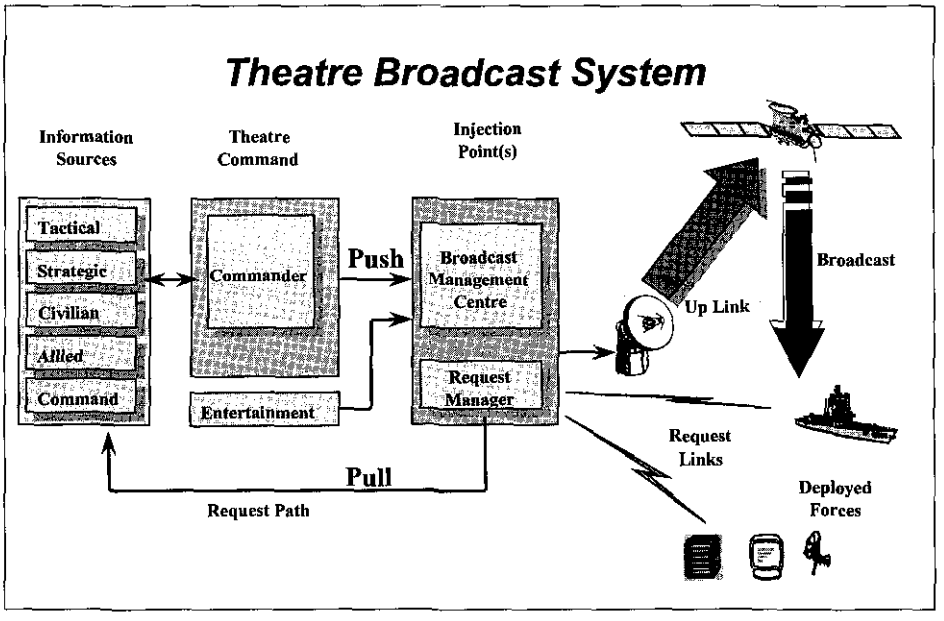


**Figure 1 - Theatre Broadcast System**

### Space-Based Navigation Systems

The ADF is also making extensive use of NAVSTAR GPS. Receivers are currently fitted on major RAN surface vessels, in Blackhawk and Seahawk helicopters, and in the F-111C, P3-C and Caribou aircraft. Differential GPS (DGPS), providing down to four metres accuracy, has also been procured for Army survey. In addition, Standard Positioning Service (SPS) manportable GPS user equipment with accuracies in the order of 100 metres, has been procured for Navy, Army and Air Force to provide the ADF with a limited initial operational capability. Precise Positioning System (PPS) hand-held GPS with much improved accuracy is also currently being fielded.

In addition, the ADF is making efforts to protect its navigation equipment from electronic attacks and prevent the use of navigation signals by hostile forces by developing navigation warfare (NAVWAR) capabilities.

## THE ADF'S ONGOING DEVELOPMENT OF SPACE-BASED CAPABILITIES

To maintain and enhance the knowledge edge, the ADF is currently engaged in a number of projects to develop or acquire state-of-the-art intelligence, surveillance and C3I capabilities. Space-based systems are playing a major role in this area.

### Satellite Communication Applications

In the area of satellite communications, there are a number of projects underway or planned. Of these, Joint Project (JP) 2008 Phases 2 and 3 will be responsible for fielding a wide variety of satellite communication terrestrial infrastructure as well as a multi-band Defence payload aboard the next Cable and Wireless Optus satellite in early 2002. This capability will substantially enhance the ADF's ability to support deployed forces throughout South-East Asia and the Pacific. Joint Project 2008 Phase 4, not yet approved, will be responsible for augmenting this capability later this decade.

Figure 2 illustrates the expected evolutionary time frames for SATCOM capabilities in both the military and commercial sectors over the next 20 years. If the ADF is to maintain the knowledge edge, it must be ready to exploit and incorporate these developments as they become available.

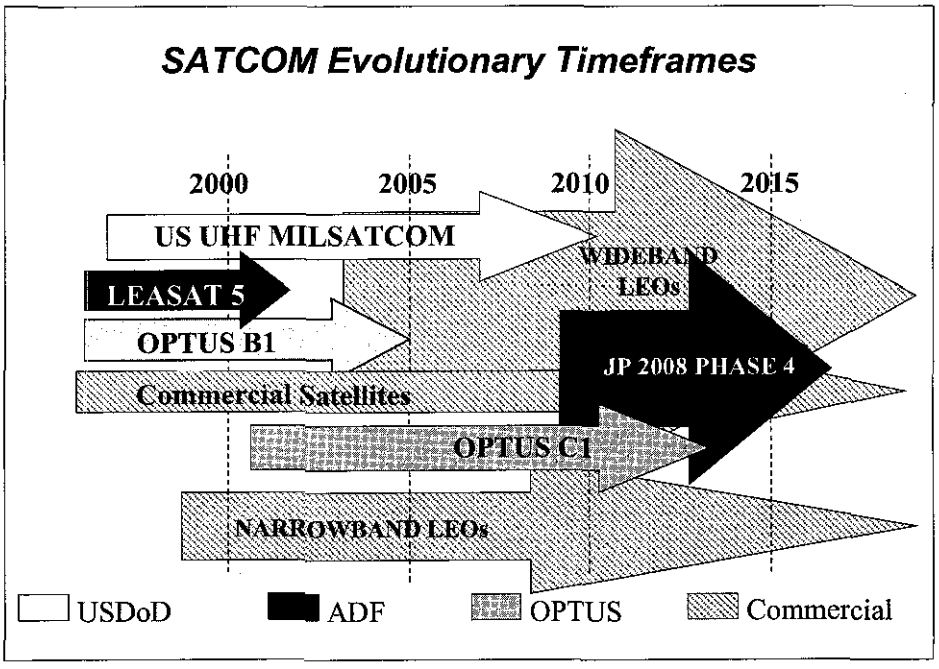


**Figure 2 – Expected Timeframes for the Evolution of SATCOM Capabilities**

In the future, SATCOM will provide the primary mechanism for the provision of a range of full duplex and broadcast services to deployed forces. However, it is important to stress that other mediums, such as fibre optics, will continue to be the mainstay of strategic communications.

It should also be noted that the ADF has a substantial investment in HF/VHF communications and that this capability will continue to be the mainstay of low data rate and voice connectivity in the tactical environment. SATCOM (eg UHF SATCOM, DMCN, Globalstar, and ICO) will only be used in select specialist areas.

### Cable and Wireless Optus C1 Satellite

When the Cable and Wireless Optus C1 (OPTUS C1) satellite becomes operational by the second quarter of 2002 it will provide the ADF with a tenfold increase in SATCOM capability. This will compliment the establishment of a Defence satellite operations centre, extend offshore coverage and support an increased demand for capacity. The OPTUS C1 satellite capability will include the following:

- X-Band (four by 60 MHz channels) which will principally be used to support full duplex services such as telephony, video teleconferencing, data transmission, facsimile transmission and messaging.

- Ka-Band (four by 33 MHz channels) which will principally be used to support the broadcast of high bandwidth intelligence and imagery products concurrently

to multiple users; remote access to web-browser based command support systems; and broadcast of radio and video services.

- UHF-Band (five by 5 kHz and one by 25 kHz channels) which will principally be used to support wide area connectivity for highly mobile users with voice and low data rate services; and UHF SATCOM currently used by naval vessels, maritime reconnaissance, special forces and land forces.

Figure 3 illustrates the area of coverage and the range of communications that the OPTUS C1 satellite will support through its three bands.

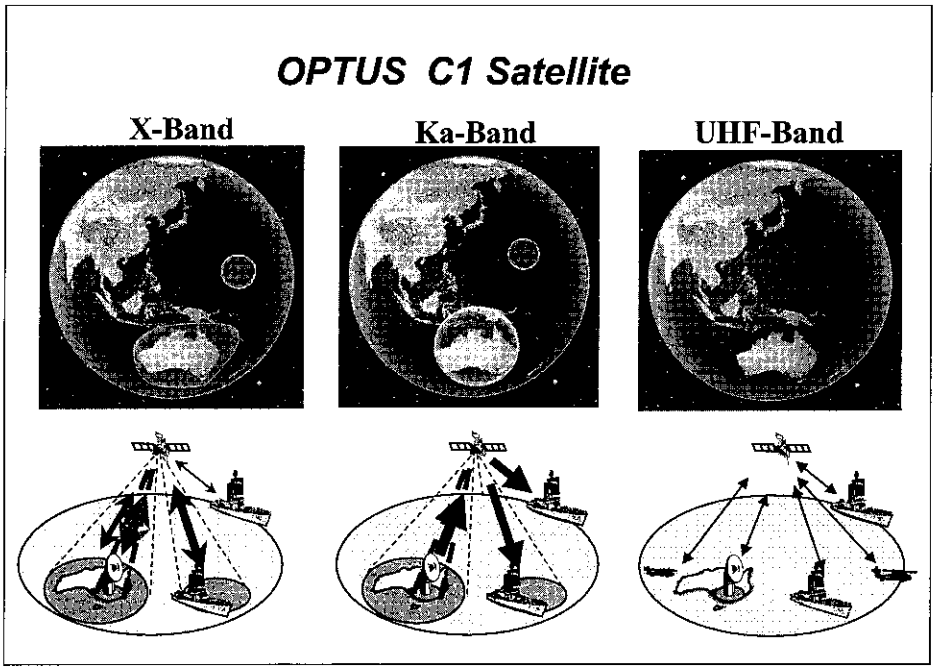


**Figure 3 - OPTUS C1 Satellite**

**Remote Sensing Applications**

Surveillance and reconnaissance are seen as key military activities in the defence of Australia. Surveillance of Australia's northern and maritime areas remains a key defence role and a priority for capability enhancement. The need to respond rapidly and decisively to any incursions by an adversary blurs the distinction between surveillance information for strategic purposes and that needed for tactical operations. Advanced technologies provide the means to cover vast areas at sufficient resolution and processing speed to detect targets of military significance for both strategic and tactical use. Overlapping and complementary coverage in the temporal, spatial and spectral domains is essential. The use of space-based assets can enable this to occur.

Emerging technologies that can contribute to enhanced wide-area surveillance and stand-off reconnaissance capabilities include high altitude and endurance (HAE) uninhabited aerial vehicles (UAVs), advanced information exploitation and robust C3I

technologies. Together they can provide the means to gather high-fidelity surveillance information over wide areas, from considerable stand-off distances, and process the information in near real-time. To explore this capability further, the ADF will be conducting a series of trials using the Global Hawk HAE UAV in 2001.

### *Improving Exploitation of Commercial Services*

To enhance its own space-based capabilities the ADF must be prepared to utilise commercial services where appropriate. One product that has significant potential for exploitation by the military is imagery derived from commercial remote sensing satellites.

The end of the Cold War has resulted in the release to industry of remote sensing space technologies, previously only available to the military. This has seen the development of high resolution commercial remote sensing satellites which can provide imagery of increasingly greater usefulness to any military force. Whilst not providing a dedicated asset tailored for a specific military application, such satellites could be exploited for intelligence purposes in specific areas of interest. In the near future, commercial remote sensing systems providing imagery in the visible spectrum and capable of sub-metre spatial resolutions, will be launched. To put this into perspective, the resolution required to provide precise identification of airfield facilities is about three metres and for the average aircraft is about 0.9 metres. Already existing commercial sensors such as the French SPOT and the Canadian RADARSAT would be capable of providing general identification of ports and harbours, and detecting medium to large surface vessels. While we need to examine how the ADF can exploit such data for its own purposes, we also need to be aware of the ability of others to exploit such commercial resources and how this might impact on our security.

## TECHNOLOGICAL TRENDS IN SPACE-BASED CAPABILITIES

There are an enormous range of new technological advances as well as general developmental trends in space-based capabilities that will significantly increase the range of options the ADF can pursue in space. While these changes will offer many advantages they will also create new and more complex challenges and significantly increase the complexities of choosing best-value options. Some of the advances that the ADF will need to consider in its approach to the militarisation of space are detailed in the following paragraphs.

**Choice of Orbital Location.** Traditionally, the majority of space-based capabilities have utilised geosynchronous, geostationary and medium earth orbits. However, the past decade has seen a substantial increase in the variety of satellite orbits on offer. These orbits range from the stratosphere at 20 to 30 kilometres, to low earth orbits of several hundred kilometres, medium and inclined orbits of several thousands of kilometres to geosynchronous/geostationary orbits of around 36,000 kilometres. The variety of possible orbital locations provides a degree of redundancy for the future military use of space as well as allowing for the optimisation of platforms for specific roles.

**Satellite Size.** Reductions in the size and power requirements of componentry and increasing computational capacity has facilitated the development of more capable but smaller satellites. Satellites now range in size from several hundred grams for nano-satellites to several thousand kilograms for geosynchronous satellites, bringing with them a wide range of choice in capabilities and cost. The larger satellites include multi-role satellites with hybrid payloads which are not only expensive themselves but have very expensive launch vehicle requirements. At the lower end of the scale are satellites that perform simple, single-role applications for low launch and operation costs.

**Constellation Types.** The limitations of using smaller less capable satellites may be overcome to some degree by employing them in new constellation types. Earlier generation space-based capabilities typically comprised a single satellite or a number of smaller satellites operating independently. With the advent of mini, micro, nano and pico-satellites, cheaper, smaller and more capable satellites can be launched at relatively short notice to support larger integrated constellations. Improvements in inter-satellite communications capabilities allow satellites to establish communications links with other satellites in a constellation. This considerably reduces the reliance on ground infrastructure and greatly enhances system redundancy and security.

**Reduced Construction and Launch Costs.** Construction and launch costs are rapidly decreasing. Satellite construction costs are being reduced through the use of common satellite buses, standardisation of componentry and new materials. Launch costs are also expected to drop over the next decade due to advances in technology, improved economies of scale as launch rates increase, and smaller payloads for comparable capabilities. An example of reduced launch costs is seen in the Microcosm Scorpius family of launchers being developed in the United States. Microcosm is aiming to reduce launch costs by a factor of five to ten, with one particular launch vehicle expected to be able place a payload of 200 kilograms in low earth orbit (LEO) for US$1.4m – equivalent to the cost of a Harpoon missile.

**Improved Antenna Designs.** Deployable mesh antennas, which are unfurled in space, allow for effective antenna diameters of up to 30 metres to be achieved. This significantly improves transmission and reception capabilities, allowing for greater miniaturisation of communications devices in the terrestrial environment.

**Improved Sensors.** Improved sensor technology will facilitate greater resolution for remote sensing applications in the infra-red, visible and RF spectrums and support the use of synthetic aperture radar (SAR) and hyperspectral imaging (HSI). Both SAR and HSI have been experimented with for some time. SAR is especially useful for locating moving targets in ground clutter, while HSI can detect, classify and identify a wide variety of signatures, including geological structures, vegetation types, camouflaged targets and specific gas and liquid effluent emissions. In broad terms, hyperspectral sensors collect returns from points on earth over a large range of frequency bands – numbering more than two hundred bands in some planned sensors. Every substance has a unique absorption and reflectance spectrum, and the returns from each point are summed, leading to the possibility of unambiguous detection, classification and identification of targets. Beyond visual range targeting will take on a new dimension as HSI technologies mature.

**MASINT/TECHINT.** These new sensing technologies not only represent opportunities in their own right but they are the harbinger of a type of intelligence that is new to Australia, called MASINT – Measurement and Signature Intelligence. The US has had a Central MASINT Office (recently upgraded to Organisation) within the Defense Intelligence Agency (DIA) since the early 1990s. Essentially, MASINT seeks to combine or fuse the results of any and all observations and measurements made of any object, event or process of interest. To this point, the value of such work has been confined largely to the technical intelligence (TECHINT) community, but faster networks and processors mean that MASINT is now coming to the point in its evolution where it is capable of providing direct support to operational planners and warfighters.

**Improved Processing Capabilities.** These new sensing technologies will require improved processing capabilities. Historically the majority of processing associated with information collected by space-based sensors has been conducted at a later time in the terrestrial environment. This delay in the processing of information was largely attributable to limitations in computational power in both the space and terrestrial environments. Recent advances in computational capability in both the space and ground segments, particularly due to the advent of massively parallel processors, facilitates near real-time analysis.

**Improvements in Commercial Imagery.** Commercial imagery is becoming readily available, with increased accuracy and improved coverage. The ability of Australia to prevent commercially available imagery from entering the public domain is likely to be very limited. We will not be able to enforce 'shutter control' as the US Government hopes to be able to do, at least for US-based and/or largely US owned commercial imaging companies. Nor would Australia be able to exert decisive influence on the shutter policies of space imaging companies not owned or controlled by US interests.

**Movement of Terrestrial Functions to Space.** Current trends suggest that many capabilities which were traditionally conducted in the ground and air environments will eventually be moved to space. Particularly in the areas of communications, reconnaissance and surveillance. Examples of this include the future JSTARS capability, stratospheric balloon communications payloads and, recently, the placement of an internet-node in space under the OMNI project conducted by NASA.

**Alternatives to Satellites.** In contrast, new options are being developed which can perform functions traditionally carried out by space-based satellites, but with reduced costs and increased flexibility. For example, high altitude, long endurance (HALE) UAVs may have the potential to meet many of our key information requirements at a lower cost than those for traditional satellite constellations. Another alternative option may be stratospheric balloons, which have the ability to remain on-station for five to ten years and offer a low cost, rapidly reconfigurable alternative to more costly and less flexible satellite solutions.

## THREATS AND VULNERABILITIES

As the development of new and improved space-based capabilities brings advantages to the ADF it will also introduce new threats and vulnerabilities. For example, the majority of military and commercial satellite systems are vulnerable to third parties geolocating users. This is particularly true for commercial systems. The degree of resolution associated with a user's geographic location is largely dependent on an adversary's access to space-based assets and the management of subscriber related information.

In fact, all information transmitted to and from space can potentially be intercepted. Historically, the approach to overcome this vulnerability has been through encryption. More recently, advances in antenna design technology have to some extent overcome susceptibility to interception by minimising antenna footprints.

Increasing dependency also brings inherent risks. The migration towards network-centric warfare has resulted in the widespread deployment of high technology infrastructure throughout the military environment. Many of these technologies are becoming increasingly dependent on space not only as a source of information, but also as the means by which to pass information. In many cases, particularly those pertaining to communications, space-based capabilities provide the only means by which these technologies can be supported. Such dependencies create points of weakness within the network.

For example, space-based capabilities, particularly those associated with communications and navigation, are vulnerable to intentional interference through jamming. This vulnerability can be partially mitigated by enhancing the space segment, through the use of on-board processing and complex antennas, and by using military specific portions of the spectrum such as Extra High Frequency (EHF). However, the costs associated with mitigating this threat are generally substantially greater than those associated with the jamming capability itself.

In addition, space-based capabilities may come under direct attack from other space-based or terrestrial threats. Space-based attack capabilities are currently limited to only a few nations, largely because of the prohibitive costs associated with the development of offensive space-based capabilities such as satellite mines and space-based directed energy weapons. However, there are a variety of means of disrupting or destroying space-based capabilities from the terrestrial environment that are more widely available. As discussed, these range from highly complex ballistic missiles to low-cost often commercial-off-the-shelf (COTS) based capabilities such as jammers, that can significantly disrupt or destroy space-based capabilities from the ground.

## ADF SPACE POLICY

If the ADF is to pursue the knowledge edge by maximising the benefits of developing and acquiring space-based capabilities and minimising the associated risks, it must develop a sound and coherent space policy. Although there are a wide range of space-

based capabilities in the development or planning stage, the ADF still lacks a coordinated policy approach to developing its space-based capability.

It is likely that in the future there will be a progressive shift from the historical reliance on allied organisations to provide space-based capabilities, to an increased self-reliance and a greater utilisation of commercial space capabilities. At the same time, it is also envisaged that regional capabilities will continue to grow at a substantial rate. The following are some of the policies that will need to be pursued if the ADF is to successfully adapt to these changes:

- **Control.** The ADF must develop the ability, within Australia's region of interest, to assure access to space, freedom of operations within space, and the capacity to deny others the use of space if required. To achieve this control the ADF must:
  - assure it has the means to get to space and operate once there;
  - be able to surveil space to achieve and maintain situational understanding; it will have to be capable of protecting critical space systems from hostile actions;
  - be able to prevent unauthorised access to, and exploitation of space systems; and
  - when required, negate hostile space systems that place allied interests at risk.
- **Augmentation.** The ADF should pursue an integrated, regionally focused surveillance of space, air and surface areas; a defensive umbrella against missile attack; and a force application capability for certain high priority targets. Through augmentation, theatre commanders should have greater situational awareness and more reaction time due to the provision of an effective forward presence in space. Built on information superiority, augmentation will take advantage of leap-ahead technologies that bring unprecedented speed, flexibility, and perspective to an increasingly lethal battlespace.
- **Complementing Full Force Integration.** The ADF should attempt to complement full force integration by integrating space capabilities and space-derived information within the land, sea, and air environments. Complementing full force integration means the right forces will have the right information at the right time, with a coherent, common operating picture shared across the battlespace.
- **Policy and Doctrine.** Policy needs to be developed to enable joint integration of commercial, civil, and allied space systems into the ADF. Doctrine must ensure space operations fully integrate with other mediums of warfare. Clearly defined space policy and doctrine must be developed to realise the full potential of space and the complex issues associated with space operations.
- **Personnel.** To fully understand and take advantage of the potential that space-based capabilities offer, ADF personnel need to develop a better understanding

of space. Greater emphasis is necessary at every level for improved space education and training. Although space support is already essential to military operations, many personnel have little understanding of the capabilities in this area.

- **Network Integration.** Information networks need to integrate space information, operations and forces to enable easy access by commanders at all levels. Organisational relationships and partnerships among the civil, military and commercial communities must be developed and defined if space assets are to be fully integrated into Defence capabilities.

- **Space Collaboration.** Space collaboration would strengthen military space capabilities by leveraging with commercial, national and international space systems. Partnerships provide more opportunities to share costs and risks. Without effective space collaboration, many potential Defence space-related projects might not be economically justifiable. Collaboration in space programs could also enable interoperability between coalition forces. In the near term, most opportunities for space collaboration will be associated with foreign programs that are likely to have completed initial requirements analysis. When investigating the potential to join these programs careful consideration should be given to whether core Defence requirements can be met through collaboration. This is especially relevant as the cost of space systems continues to drop and the feasibility of owning indigenous systems improves. Close liaison with Australian and regional space industries can provide Defence with a good understanding of industry planning and investment considerations. Cooperative planning could develop architectures or system designs that satisfy both partners' requirements at a lower cost.

- **Capability Management.** Many terrestrially-based systems can be complemented by equivalent space-based systems and a number of military capabilities can now be achieved using space. As more of these space systems mature there will be greater justification for considering space-based systems to either complement or replace some ageing and less capable terrestrial systems. Analysis of capability management trade-offs needs to be considered from a whole-of-life cycle perspective. The life cycle cost for space systems is different to aircraft in that, once the satellite is operational, the operating costs are very low assuming one owns the satellite. Trade-off analysis for capability replacements and upgrades should include equivalent space systems. However, to achieve meaningful comparisons, Defence needs to improve its knowledge base and familiarity with concepts and capabilities associated with space systems. Increased levels of research are also required to meet this requirement.

To successfully pursue these policies and ensure that the ADF maximises the potentials of space-based capabilities to maintain its capability edge it must actively develop a range of enabling programs in a well informed, coherent and coordinated way. The management of space within Defence over the last two decades has at best been disjointed. As we become more dependent on space capabilities, it is essential we start coordinating a more self-reliant approach to space. To this end the ADF should consider forming a Joint Office of Defence Space.

## CONCLUSIONS

In conclusion, space will become increasingly critical to future ADF operations. There is likely to come a time where a large component of warfighting information will pass through, or be derived from space. This will increasingly become the case as traditional terrestrial capabilities such as imagery, communications, surveillance and reconnaissance are progressively transitioned to space.

The commercial sector is likely to significantly influence the future military use of space. Particularly since it is the developments in this sector that largely shape technology trends. These trends have resulted in a substantial lowering of costs and an increase in space-based capabilities. It is likely that this will continue for the foreseeable future.

Despite the many benefits associated with space-based capabilities, it is not without its drawbacks. Vulnerabilities of space-based capabilities include susceptibility to geolocation, jamming and interception. Many of these vulnerabilities lend themselves well to asymmetric attack and must be taken into consideration as the ADF's dependence on space increases.

This increasing dependence on space-based capabilities will largely be driven by Australia's most recent strategic guidance. This guidance places considerable emphasis on the attainment of capabilities that provide the ADF with a 'knowledge-edge'. Many of the capabilities currently being procured, particularly in the areas of command, control, communications, computing, intelligence, surveillance, reconnaissance and electronic warfare (C4ISREW), are either directly or indirectly connected to space-based capabilities.

The key long-term enablers required to optimise the ADF's use of include ensuring an understanding of future direction of space, early engagement with industry, leveraging off developments in the commercial sector, development of a space-related skills base within the ADF, and creation of space-doctrine.

Although there are a wide range of space-based capabilities planned and underway, and space is becoming increasingly critical to ADF operations, the ADF currently lacks a coordinated approach in this area. To remedy this, consideration should therefore be given to the formation of an ADF 'Space Office' to coordinate ADF space policy and activities.

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## *DISCUSSION*

*Wing Commander Bob Howe (Ret'd) (Disney-Howe Associates Pty Ltd):* I enjoyed your presentation, it was very good. I am here representing the South Australian

Government, with definite vested interests in optimising or maximising the use of the Woomera Range. I must admit from an industry point of view, we have looked at the potential for Project JP 2044 over the years and haven't seen too much of a launch capability come along. We would certainly like to see that accelerated and we are looking forward to that, and it's nice to hear your views on that. One question regarding the relationship with the commercial sector, and I guess I see it as a bit of a threat, is the actual use of the spectrum, and I think your Timor Tax is about to be taken away by the wonders of the actual money that's going to come in for the sale of the spectrum. I recall from past Air Power Conferences some of the warnings given by senior US presenters, who warned us about selling off some of the spectrum to civil owners. Do you see any threat from the sale of the spectrum to civil owners, which could affect your plans for using defence in space?

*Air Vice-Marshal Nicholson:* Not just space but all aspects of communications are extremely vulnerable to management of the spectrum as a whole. We can't expect the kind of unrestricted and dedicated access that we had in the past. But on the other hand, we can't afford to lose large areas of the spectrum that we already control. Unfortunately, in the world radio conference forum there are not many countries that are actively working to ensure that the spectrum is controlled – the US in particular and Australia is a supporter in this area. I don't have all of the answers, it's a highly technical question. It is also a matter of government and governments balancing their priorities, and I won't comment on that here of course. But I would emphasise that it is a threat and it is driving us, you might say the more advanced users, into higher and higher frequency areas, and perhaps the commercial users might even lead the way here. I must admit, being a technology optimist, that I believe that there may well be more technical solutions to some of this than there has been in the past.

*Squadron Leader Mark Jansen (RAAF):* Although not directly covered in your brief, can you comment on the impact of direct energy weapons systems on space domination specifically, and the impact on warfare generally?

*Air Vice-Marshal Nicholson:* Terrestrially-based directed energy weapons, in fact directed energy weapons period, are not in the province of small powers or the sorts of groups and threats that Dr Hallion, amongst others, alluded to. This is major power activity, and I don't see that sort of weapon becoming freely available to small nations or small groups, so it doesn't pose an asymmetric threat; it is a major power kind of situation. It is clearly technically feasible and there is continuing research and development to achieve these capabilities. But there are much cheaper and equally capable ways of achieving the same sorts of effect. As both the previous speaker and I have emphasised, and in fact the whole theme of the conference, these asymmetric threats are in my view likely to be much more significant. Terrestrial electronic warfare is but one example.

*Dr Alan Stephens (Aerospace Centre):* I appreciate that because of classified limits you might not be able to answer my question, but perhaps if you feel uncomfortable Doctor Hallion could address it. At a couple of conferences that I've been to in the United States in the last year, I have got the very clear impression that there were going to be weapons in space and they are going to be there relatively soon. I would just like to hear a little bit more on the technology of that and, more specifically, what it would

mean for the rest of us. It would seem to me, to partly answer my own question, that it would have extremely profound implications for warfighting concepts.

*Air Vice-Marshal Nicholson:* I'll start and Dr Hallion can finish, perhaps. There is no doubt it will have profound affects because a very large part of global communications and the global economy – the whole functioning of the advanced economies particularly – depends on the movement of that information, and it's primarily by space means. So disrupting that in any way is going to affect everybody. It is a little bit like the conflict between, and I am not walking around the question here, the new economy and the old economy. Has the new economy made the old economy irrelevant? Well the fact is that if the Nasdaq drops 15 per cent, it brings down the Dow 10 per cent. It's the same sort of thing that will occur, and it is so easy to do. You don't need to use high-powered, highly expensive, highly complicated systems. My view is that the technology is advancing so fast that it is quite likely that there will be the ability to put weapons in space at very low cost, and by weapons I mean the means to disrupt satellites. For example, with the very low launch costs of very small satellites, a co-orbital satellite killer or a space mine becomes very, very feasible; a very asymmetric and affordable option for second-rank nations.

The Australian Government, of course, is committed to not allowing weaponisation to occur in space, as are a large number of other nations, and that is a policy issue that I will not go into. But there is no doubt the technology is there and, to me, the nature of warfare is such that the intent and motivation will also be there to put these sorts of weapons in space, or to put things in space that can damage space-based systems. However, I actually think that asymmetric attack of all kinds of ways on the ground segment is much more likely. Dr Hallion, would you like to make a comment?

*Dr Richard Hallion (USAF Historian):* I concur with everything that Air Vice-Marshal Nicholson has just said. My own presentation was getting quite long so I didn't have a chance to really get into the space warfare side of things. Space access is becoming very, very routine now and we are seeing, particularly because of some of the technologies that were illustrated by Air Vice-Marshal Nicholson in his presentation, the opportunity now for countries – including quite small countries – to engage in space and competitive space launch. That may sound far-fetched but if you take a look at the marrying up of airlift aircraft – for example wide bodied transports equivalent to say the Lockheed Tri-Star or DC10, or things of that sort – with the small air-launched boost system, and I'm thinking particularly of the American Pegasus system, we are seeing I think very quickly a revolution in the idea of putting small satellites in orbit that can indeed serve a variety of purposes. The space mine is a classic example of this. I think we are going to see a migration of so many missions to space, certainly in terms of early warning and things like AWACS and JSTARS working together – JWACS if you will – that coming very quickly on this is going to be almost inevitably a weaponisation of some space system itself to project power from space into the atmosphere and against targets on the surface of the earth as well. You know if we think about it, and I know that this may strike some of our surface warfare colleagues the wrong way, we already hold surface forces largely in thrall through the air medium. When we are actually able to get to the point to do this from space, we will hold the atmosphere in thrall as well. I think that there is an inevitability to this. I think that we will see a tremendous number of attempts perhaps to restrict this by international arrangement or treaty or whatever, but I do not really think that that will

actually occur. I think we will see, certainly by the middle of the next century, I should say by the middle of the century we're now in, very much an active weaponisation in space program.

*Air Vice-Marshal Nicholson:* This has important connotations for conventional air power too, because there are two kinds of philosophies that you can adopt here, one offensive and one defensive. Offensively, you can go after the adversary's space system, either in space or his ground segment, and I think the latter is more likely although the former is increasingly available. The other aspect, and Dr Hallion raised this too, is what I would call counter-surveillance or stealth. How far do we go here? We have sort of gone through a period of signature reduction and we are now starting to look at signature control, including quite crude methods as used on modern stealthy aircraft like the F-117, the B-2 and the F-22 and JSF, but that in my mind is a relatively crude way of controlling. Again, being a technology optimist, I think it is quite likely that we will find ways in the next few decades to start to control signatures electronically or logically. And that will change the debate, the philosophy between attack and defence in my mind. One of the very important things in this is convergence, and we haven't done enough work on this, the convergence of information micro, nano, pico-technologies and biotechnologies. The biotechnology sphere is the one that I think is something where your signature control – your counter-surveillance against the sorts of capabilities which we know hyperspectral gives you – is completely adaptive and reactive, where the thing changes form; changes its absorption and reflectance as it is being illuminated.

I think this will be a very interesting debate for us to have because the United States, in particular, has invested an enormous amount in stealth and, if it's not correct, it's going to be a lot of money down the tubes.

*Air Commodore Norm Gray (RAAF):* During your presentation you spoke about whole-of-life and a short access. What type of capabilities should we be developing in Australia in our national support base – our non-military national support base – for space?

*Air Vice-Marshal Nicholson:* I think we need a launch capability. The technology is moving so rapidly that many of the problems which have stopped the efforts of the South Australian Government, for example, to push this, have been because it is such an expensive proposition to put this infrastructure in place. That infrastructure cost will start to come down very rapidly. There is some very good work being done in DSTO and the CSIRO, to name just two, on hyperspectral imaging. An indigenous hyperspectral imaging capability, which will provide all kinds of environmental and other economic benefits, I think is worthy of support.

# MANIPULATING THE MEDIA

**DR STEPHEN BADSEY**[1]

## HISTORY, THEORY AND THE MEDIA

As a starting point for deliberation on 'Air Power and Joint Forces', the RAAF could hardly have done better than to call the attention of contributors to this volume to John Slessor's notable book *Air Power and Armies* of 1936. One of the very few books written on the theory and practice of air forces in cooperation with other armed forces, this book consists chiefly of the lectures that Slessor gave as RAF Member of the Directing Staff at the old Army Staff College Camberley 1931–1934. Despite their different names, Sandhurst and Camberley are physically located on the same site, and on most days I drive past the building where Slessor gave those lectures. But for all its merit, to a historian asked to consider the media as an issue related to asymmetric threats, Slessor's book has a questionable point of departure. Specifically, on the first page of the introduction, Slessor repeats with all the confidence that historians associate with an innovative, thinking, middle-ranking officer destined for high rank the most frequent military **mistake** about the nature of history:

> My sole object has been to draw conclusions on which to base useful lessons for the future. After all, the really important function for any kind of military history is not to serve as interesting material for the general reader, but to enable commanders and staff officers to be wise **before** the event.

If only it were that simple. Only the most ignorant would suggest that commanders and staff officers should not study history. Equally, military personnel can qualify or re-qualify as historians given the necessary education and experience, just as they may re-qualify for other professions. Interestingly, it also works the other way around, and professional historians have a very good record of retraining as intelligence officers. But historians, like intelligence officers, know that if an individual or institution wants evidence of something badly enough, they will find it whether it is there or not; and conversely if the facts present a picture that they do not want to see, then they will not see it. There have been many cases of the 'lessons' of history being like this, and quite a number have appeared in discussions over the last few decades on the relationship between the armed forces and the mass news media. All too often, reporters and serving officers hold and defend very fixed positions, rather than being willing to explore what has been a complex series of events. Real history is a protracted, uncertain, messy business, much best left to professionals.

The problem of whether 'lessons' can be drawn from history is also directly connected to the contemporary issue of the role of the mass communications media in military operations. What connects them is that, above all, history means **context** for modern

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1 Although the author at the time of writing was an employee of the British Ministry of Defence the views expressed here are his own and not those of any organisation or institution.

events and modern ideas. Sixty years ago when Slessor wrote and flourished, the most notorious weakness among political and institutional leaders was scientific and technological ignorance. There is a famous anecdote that when in the early stages of the Second World War the British Special Operations Executive (SOE) complained that all the best radio frequencies had been taken by other organisations, the minister responsible replied that he would ask Churchill to create some even better ones! But in today's age of Humanitarian War, Peace Operations, and Complex Emergencies (and the other doctrinal terms used officially or unofficially by armed forces to cover such difficult military operations), the problem is more likely to be an ignorance of the results of previous attempts, of culture and ethics, of belief systems and social interaction, of political thought and factual evidence – in short an ignorance of history. To cite only the most obvious example, recent peacekeeping could have learned a lot from closer study of the UN involvement in the Congo 1960–1962, rather than trying to re-invent doctrines and procedures from scratch.

Recently, air power pundits have been particularly guilty, as part of a fashion among strategic thinkers, of trying to bolster a weak case with questionable historical analogies, presumably on the theory that the audience will be impressed by the unfamiliar. The 1999 NATO bombing campaign over Kosovo has been compared both with the legions of Imperial Roman and 18th Century siege warfare. There have been ostensibly serious discussions as to whether Ghengis Khan practised Blitzkrieg or information warfare. Above all, the bombing campaigns of the Second World War have been repeatedly used not to illuminate present issues (as we have heard them used in this conference), but entirely as a cultural reference point for modern uses of air power. The failure to explain to the wider public the changes in the technology and use of force that have happened since 1945, and particularly since 1990, is one of the more important problems facing the users of military force today.

These complex military changes have also been accompanied by changes almost as great in the technology and organisation of the news media themselves. The expansion in civilian global communications was already visible in 1989 in the way that Western radio, television and newspapers covered events in the Soviet Union and China. By the 1991 Gulf War it was obvious that a major change in war reporting had come into being. The British television journalist Nik Gowing (presently anchorman for BBC World Television) has characterised the 1990s as 'The Decade of the Dish'.

But globalisation of media communications has since 1989 become part of a wider social, cultural and commercial trend: the decline of 'old media' or 'old news' (network television, broadsheet newspapers and weekly current affairs journals) against the rise of 'new news' (satellite and cable television, television and radio chat shows, tabloid newspapers) as the principal means by which most people obtain their understanding of the world. Added to this has been the marked decline of the professional or specialist defence correspondent, the increasing youth and lack of experience of military affairs of television or newspaper staff, and the information stream offered on a global and continuous basis to media outlets. There is presently a widespread belief that, with cheap video cameras and fax machines, the media are everywhere and everyone is a journalist. The famous pictures of a dead American soldier being dragged through the streets of Mogadishu in October 1993 were taken not

by a professional journalist but by a Somali driver, using a Hi-8 video camera left behind by a departing Reuters' team which had employed him as a stringer.

The most recent and important addition to 'new news' has, of course, been the Internet, which has grown from the creation of the Worldwide Web in 1992 to make it a significant factor for operations in both Kosovo and East Timor in 1999, if only as a form of elite communication. During the period of the Kosovo conflict, March–June 1999, the number of Internet connections in Yugoslavia, including Kosovo itself, doubled to over 50,000 (and the number doubled again in the following year). By 31 March 1999, the British Government official website on Kosovo was receiving 150,000 hits a day, 1,400 of them from within Yugoslavia; and inhabitants of Kosovo were e-mailing accounts of Serb atrocities to London for future war crimes prosecutions. An accompanying British Government website in the Serbian language received 10,000 hits from within Yugoslavia in its first five days. This degree of interpermeability, with Internet communications bypassing the traditional gatekeeper function of 'old news', is now a feature of military operations. It has been suggested that in 1999 the Internet made its first impact on warfare in the way that, back in 1950, what was then the equally immature phenomenon of television made its impact on the war in Korea. It is perhaps interesting to speculate from this what an Internet Vietnam might be like.

## MANIPULATING THE MEDIA

The title of this paper, 'Manipulating the Media', is not a personal choice, but simply the working title originally provided by the conference organisers. Of course we all recognise the dangers of such words. The armed forces of a democratic country, in peace or at war, have no more right or authority to manipulate their own domestic media than to manipulate the law. To cite no other text, the landmark UN 1991 Windhoek Declaration is quite explicit on this matter. Even to raise this issue takes us into areas of subversion from which most officers instinctively shy away. Armed forces do have a perfect right to attempt to **influence** the media, but that is another matter, and one on which the distinction should be clear-cut and absolute.

In this respect, and since issues of credibility often rate so highly on operations, members of some armed forces often do themselves no favours in their own thinking and writing about the media. In East Timor in 1999, UN forces led by Australia engaged in a United Nations Chapter 7 Peacekeeping Operation – or what current British doctrine calls Peace Enforcement. If a middle-ranking officer had described this as Australia 'going off to war', then it would be apparent that he did not understand his mission. In another context, someone who spoke of 'saturation bombing' when he meant 'close air support' would perhaps be less clearly mistaken, but would have given a very misleading impression of what was actually happening. Yet military opinions are given and even published, in Australia and other countries, describing manipulation of the media as part of Information Warfare; confusing Media Operations with Psychological Operations (Psyops); and describing NATO as employing 'censorship' of the United States' domestic media during the Kosovo crisis – something which would have been physically impossible as well as quite illegal.

Such writings only serve to fuel suspicions among media critics of the armed forces, some of whom need little encouragement. One of the fundamental principles of military-media relations since the First World War, at least in Britain, has been 'Never tell a conscious lie to the press'. In an article in the British newspaper *The Guardian* in March 2000 one long-serving journalist and critic of all things military, the London-based Australian reporter Philip Knightley, preferred to give his own version of this as 'Lie directly only when certain that the lie will not be found out in the course of the war'.

One of the curiosities – perhaps even one of the asymmetries – of this subject is the surprising absence of any proper analysis of the role of the media on operations, and their impact on the wider public, in current or even classic air power theory. During recent decades theorists of air power have been deeply concerned with strategies of coercion and containment, of deterrence and of Psychological Operations (Psyops – or 'Psyop' in the American). The single most useful and undervalued psychological weapon of the 20th Century has been the humble air-delivered leaflet, when linked to a bombing campaign. Airmen have also been at the forefront of developing Command and Control Warfare (C2W), and Information Warfare in its purely technological sense of physical or electronic attack on hostile information systems. Obviously all these developments are related to what in the 1990s we came to call 'media war': the interaction between politics, public opinion, the mass media and military operations; and logically an appreciation of the media and its role should be close to the heart of modern air power theories. But in searching both theory and practice, this is not what we find. Armies and even navies have given considerable attention to this issue, and now expect to deploy with well-organised media plans, but there has been almost no interest from air forces. The lack of coordination between the NATO air campaign and the media campaign over Kosovo in 1999 is again a case in point. This mismatch, both in theory and practice, of the assumptions behind the use of air power and the findings of research into the media is one of the main themes of this paper.

Conversely, there is also no doubt that one of the legitimate functions of the news media themselves, as part of civil society within democratic countries, is to influence both political elites and the wider public. Whether the news media should try to **manipulate** either the deployment of armed forces or their conduct once deployed is a matter of great controversy. Some war reporters believe strongly in what the veteran Martin Bell of the BBC (since 1997 a British Member of Parliament) has called 'the journalism of attachment'. In the long-running involvement of UN forces in former Yugoslavia 1991–1995, journalists more than once told senior officers in confidence that they had chosen their side, and that their personal objective was to promote even greater and more violent Western military intervention.

Even without such extremes, there can be many difficulties in the relationship between armed forces and the media on operations. There are few more potentially explosive culture-clashes than that between, on the one hand, reporters who regard it as their fundamental role to cast doubt on the statements and motives of any authority figure, and on the other hand, senior officers who are not used to having their pronouncements questioned, and who regard such behaviour as an attack on their personal honesty and professional integrity. The British commander of the UN Protection Force in Sarajevo in 1994, Lieutenant General Sir Michael Rose, not only physically threatened a

journalist who had raised such doubts in print, but retells the story in his own memoirs *Fighting for Peace* with much pride and enjoyment.

However, the days are also long gone – if they ever actually existed – when the armed forces and the media on operations could ignore one another. The institutional and technological changes of recent decades have increased the speed of media interaction with 'real time' political and military events, and the penetration of both the old and new media into their very fabric. In a famous remark made during the 1991 Gulf War, Benjamin Netanyahu (then Israel's Deputy Foreign Minister) spoke of 'a Heisenberg physics of politics. Once you observe a phenomenon with television, instantly you modify it somehow'. Naturally, this interaction between events and the manner in which they are reported did not apply to all military operations of the 1990s, nor has it invalidated the experience of previous decades. What it has done is to remove any doubt that media issues, and the manner in which the media war is fought, have now become a consideration of the first importance on military operations.

Given these difficulties it seems appropriate (in the hope that it will not also prove foolhardy) to accept the challenge offered by the phrase 'Manipulating the Media', and the wider challenge offered by the theme of asymmetry. What approach would be used by those actively interested in manipulating the media for their own purposes, and unconcerned about the political legitimacy of their actions? There have been two broad scenarios for this in recent times. One scenario is of a state or sub-state government and people, under threat from a more powerful neighbour, who are actively trying to provoke Western military intervention in support of their ambitions, or even their own survival in the form of humanitarian assistance. The other scenario is of an undemocratic head of state interested in ways of using the media in all its forms to offset the effects of an attack by Western powers that begins with an air campaign and may escalate to a ground war.

## THE CNN EFFECT?

In the case of the first scenario the issue is whether the Western media, most obviously that of the United States, can be manipulated in order to bring about a military deployment; and if so, how this can be done. In other words, is there such a thing as 'The CNN Effect'? The modern prototype for such cases came in 1990 when the Kuwaiti Government, its country under Iraqi occupation, spent US$10.8 million chiefly through the Washington public relations firm Hill & Knowlton, on a propaganda campaign aimed at elite and general American public opinion. This included the notorious televised testimony to the Congressional Caucus on Human Rights on 10 October 1990 by a Kuwaiti girl that Iraqi soldiers had thrown babies out of their incubators. The story, briefly taken up by Amnesty International and repeated by President George Bush, was a fabrication, and the girl was the daughter of the Kuwaiti ambassador. Before this could be publicly revealed, a special audiovisual presentation on Iraqi atrocities was given to the UN Security Council, just two days before Resolution 678 authorising the Gulf War was passed.

On an altogether different scale from the Kuwaiti Government experience, but still an important part of the Gulf War, the presence of American, French and – as it happened

particularly – British television cameras in Northern Iraq, reporting on the plight of the Kurds in March 1991, helped precipitate the Western military Humanitarian Intervention known to the Americans as Operation PROVIDE COMFORT, while the much greater plight of the marsh Arabs of Southern Iraq went unreported and unconsidered. This experience, together with that of the Gulf War itself, led to the argument that a cheap form of defence might be available to small countries and aspiring national groups by investing in resources to manipulate Western – chiefly American – public opinion through the media and by other methods.

The 1990s saw several claims for this kind of manipulation. In 1992–1993 in Cambodia, according to later analysis, the Khmer Rouge was able to generate the impression of a major famine and obtain external aid and support, in order to strengthen its own political position. In 1994 in Nicosia, an American political lobbyist publicly promised the Cypriot Government that in return for an outlay of US$150 million over three years he could **guarantee** a change in American policy leading to the unification of Cyprus (compared to a Cypriot defence budget of about US$200 million a year). In 1992–1995, the Bosnian Government succeeded in a sustained propaganda campaign to win over important members of the international news media in Sarajevo, as part of its broadly successful strategy to secure American military support. Finally, in December 1998 the Kosovo Liberation Army (KLA) deliberately engaged in acts of terror against Kosovan Serbs in the hope of provoking a Serbian overreaction for the benefit of the OSCE Kosovo Verification Mission and its accompanying media. When this overreaction came next month in the form of the massacre of Kosovo Albanians by the Serbs at the village of Racak, the KLA even put the resulting pictures on the Internet.

The existence of 'The CNN Effect' has been closely studied and argued for almost a decade now. The major problem has been one of obtaining evidence, which largely consists of the views of those involved in the decision-making process, often given after the event and off-the-record. Most politicians and senior decision-makers deny the existence of 'The CNN Effect', but then few politicians are likely to admit to having been **unduly** influenced by the media; some, usually out of office, are prepared to argue that it happens to others. Most journalists believe in 'The CNN Effect', because they like to believe in their own influence and the importance of the media; indeed, with a perverse pride, some British journalists have argued that it should really be called 'The BBC Effect'. Senior military figures have on the whole supported the idea, sometimes paying a backhanded tribute to the media's ability to dictate to themselves and their forces. However, such criticism may perhaps be taken as code for criticism by the military of their political superiors: what is being blamed is not the media for doing their job, but the whole decision-making process.

Finally, there is the view that 'The CNN Effect' may be new and unfamiliar, but that it is either harmless or beneficial: all that is happening is the extension, through new communications technology, of democracy to the unfamiliar area of foreign and defence policy, which is entirely a healthy trend. This argument goes that there is nothing actually **wrong**, in a democratic sense, with political leaders responding to public opinion as expressed through the media to take actions of which they hope the public will approve.

Assessing 'The CNN Effect' also means assessing its failures: circumstances in which the most intense reporting and visual imagery has entirely failed to produce a significant Western military response. The most obvious, and most studied, cases have been the genocide in Rwanda in April 1994, and the fighting in Chechenya 1994–2000. Rwanda is a particularly interesting case in that the media effect, in so far as it has existed, has been indirect. The failure to respond effectively to a genocide left a number of Western political decision-makers with a guilty conscience, and it has been other peoples under threat who have benefited from this: certainly in Kosovo. One further noteworthy finding regarding 'The CNN Effect' is that in each successful case of a military deployment **apparently** arising from media reporting of a crisis, the response came from elite opinion rather more than popular opinion in the mass. There has not been as case yet of 'the people' marching through the streets demanding that the troops be sent in or that something must be done.

Summarising a great deal of analysis, if a consensus presently exists on 'The CNN Effect' it is as follows. First, that as part of the complex mixture of influences that accompany the decision of any government to use military force, the role of 24-hour global news reporting is the most recent factor, but by no means the only one. Much as for the effectiveness of economic sanctions, or for that matter an air bombing campaign, a great many other factors also have to be right as well, many of them rooted in traditional politics and strategy. Secondly, and consequently, 'The CNN Effect' in its **purest** form, of a direct and automatic causal relationship between media reporting of an overseas event and subsequent military action, resembles the Douhet hypothesis of strategic bombing in its purest form also, as an unverified and improbable set of beliefs. But that is no reason to dispense with either concept altogether, or to believe that weaker forms of the hypothesis do not have validity.

## THE CNN DEFENCE?

The issues involved are no less complex for the second scenario, that of the political leader of a country who seeks to manipulate the media in order to offset the effects of a Western air bombing campaign, and to avoid a consequent land assault. Anything said about this scenario must be more speculative than the first, since there have been only two examples in recent times: that of Saddam Hussein of Iraq in January 1991, and Slobodan Milosevic of Yugoslavia in March–April 1999, and the two cases contained significant differences. (A third possible example, Operation DELIBERATE FORCE against the Bosnian Serbs in 1995, remains shrouded in controversy and mystery, and had no significant role for the media, except perhaps to register its failure to report the events.) It is presently hard to envisage such events taking place in which both the political pressure for military action and the main assets for the air campaign would not be provided by the United States. It is equally likely that other countries would provide aircraft and perhaps warships; and that the issue of the United States providing troops for a ground war might be in dispute. It seems fair to allow into this scenario an international news media that is dominated by the United States, that does not understand modern air campaigns, and that is inherently suspicious of any military pronouncements. At the risk of stating the obvious, the objective of such a political leader in this situation is to stay in power.

Air power theorists argue that in these circumstances the advantages lie overwhelmingly with the attacker: the shock and paralysis of a preliminary air and electronic strike, 'going for the head of the snake', is something from which a defender cannot recover. But reality does not always obey the lessons, and a number of advantages may lie with the defender. In the particular case of Kosovo, for political reasons the NATO air campaign began only gradually, and consequently the Yugoslav Government and armed forces were able at first to dictate the pace of events to NATO to an unusual degree. This included using the national media over which they had **control**, and Western international media over which they had **influence**, to promote their own propaganda line of NATO bombs hitting civilian targets, while depriving NATO of supporting media evidence for the main justification for the bombing, that it had intervened to prevent the ethnic cleansing of Kosovo. Alastair Campbell, the British Prime Minister's press secretary, who was on loan to NATO at the time, confessed in a speech to the Royal United Services Institution in London in July 1999 that he and his fellows were simply unable 'to force this pictureless story onto the news agendas'.

Many Western countries, and the UN in particular, have based their media strategies on the idea that truth and honesty will overcome propaganda, only to see such strategies fail repeatedly in the 1990s: in Bosnia, Somalia and Rwanda in particular. Historians may hope that there is long-term validity to the idea that exposure to truth and knowledge makes for better citizens. But for many countries control of the media is simply an aspect of political power. The people are not asked to believe in government pronouncements (although they may wish to do so), only to believe that the pronouncements come from the government, which also controls the armed forces and the apparatus of a repressive state. The outstanding example of a successful Western information campaign in the last decade has been I-FOR, the NATO Implementation Force in Bosnia in 1995, which came equipped not only with a well-organised and resourced plan, but with considerable military force and the mandate to use it.

Repeatedly, the political power manifest in control of the national media has been important in enabling leaders of undemocratic states to survive serious but limited military defeats. One of the most persistent of Western illusions is that defeat for such a leader must automatically mean his political resignation or overthrow. In fact the one case of this in recent times was General Leopoldo Galtieri of Argentina after the 1982 Falklands conflict, who was hardly a typical example. From Gamal Abdel Nasser of Egypt in 1967 onwards, there has been a consistent pattern of such leaders successfully continuing in power, partly by using their own national media to deflect blame onto traditional hate-figures. It is not even unusual to gain prestige from a defeat, sometimes with the help of your enemies. It was an anonymous United States' senator who in June 1999 said of NATO's performance over Kosovo: 'we sent an elephant to crush a gnat; the gnat is not crushed, and the elephant is limping'.

The question here is whether it is possible to defend successfully against an air campaign, and to block a ground campaign, by use of the media as one aspect of a wider political and military strategy. Putting that in a slightly different way, is it possible for a militarily weak and repressive country to use control of its own national media as a propaganda arm, together with influence over the international media, to affect Western – principally American – political and public perceptions in order to

restrict, degrade or even halt a bombing offensive shortly after it has begun? This is a very important issue. Since the 1984 Weinberger doctrine at least, it has been an axiom of United States' foreign policy that its forces will not be committed to operations overseas without the support of the people and their representatives in Congress; a policy strengthened by PDD 25 in 1994.

Despite the absence of discussion in the open sources, there seems to be a belief or fear implicit among air power theorists and airmen themselves that such a media strategy might succeed, and this fear has been exploited by their enemies. Most importantly, it includes the vexed question of casualties to United States' aircrew, the belief that news of any losses, relayed through the media, would have an immediate and dramatic effect on public opinion back home. This has had a marked influence on air operations from the 1991 Gulf War, in which pilots were explicitly briefed that there was 'nothing worth dying for' over Baghdad, though to 1999 with the decision that American aircraft would fly no lower than 15,000 feet over Yugoslavia during the Kosovo conflict, for their own safety. This is not to suggest that in either case (or the others that came between them) the air environment was 'safe' for the aircrew involved; simply that their greater safety was a major priority, in part for reasons related to the media.

This is 'The CNN Effect' at its most extreme, supported by memory of prisoners-of-war in Hanoi up to 1973, and perhaps also of the 1979–80 Tehran hostage crisis. Again, there are obvious difficulties for any civilian theorist discussing the issue of military casualties; but such evidence as exists does not appear to support this belief. In particular, the use of captured aircrew to read prepared statements on television by the Iraqis during the 1991 Gulf War only enraged Western public opinion in favour of greater military action. The dilemma is that the only way to test the belief would be to take losses among the aircrew concerned. Even so, present policy may be pointed out as a very good example of how assumptions about how the media and public opinion **might** behave have had a major impact on an air campaign. Like an enemy dummy minefield, the threat is as real as you think it is.

There is also much to be said against the view that public opinion – including the opinion of political elites – could suddenly reverse itself on the merits of military action. Any country's ruler who is a target for a United States' bombing campaign is likely to have already been a target for sustained vilification by the United States' media, often over a period of years; perhaps originally against the wishes of the government, as with Saddam Hussein before August 1990. Once a mass media context for such a leader and his behaviour – what some media theorists very appropriately call a 'frame' – has been established, then past experience suggests that it is extremely difficult to remove. After decades of effort, the political leaders and people of Palestine have still not entirely removed the media frame of reference for themselves as 'terrorists' that they acquired in the 1960s.

Any contact between such a political leader and the Western media therefore takes on what is called a 'reflexive' quality. Although ostensibly addressing Western public opinion, interviews or statements are timed as part of an overall political strategy and their contents aimed at demonstrating to his **own** people his political importance as a world statesman, and the rightness of his cause. During the Kosovo conflict, the only interview given by Slobodan Milosevic to Western journalists was an hour-long appearance on the Texas television station KHOU-TV on 21 April, timed to steal the

thunder of the NATO 50th Anniversary speeches in New York; and from his very first answer he launched a sustained attack on NATO's media credibility. Since credibility is a war aim for both sides, one of the most valuable assets for any defender against an air campaign is that bombs miss their targets, or do not hit what was expected to be there. If only as a matter of statistics, the most precise air attacks if carried on for long enough will cause civilian casualties. How well an attacker copes with this depends on how well he has analysed and prepared for his own probable mistakes, but the credibility of any country conducting a bombing campaign from a position of Humanitarian Intervention will always be a vulnerable one.

A second example of an **assumed** belief in the media's power influencing an air campaign is the equally difficult case of a controlled national media which broadcasts overt hate propaganda. There were no protests when in January 1991 American air and missile attacks took Iraqi television and radio off the air at the start of the Gulf War, but since then attitudes appear to have changed. In late 1991, prior to the Bosnian declaration of secession from Yugoslavia, Bosnian Serbs captured television relay stations and re-tuned them to transmit their own propaganda, preparing the ground for the fighting that came later. The role of *Radio Milles Collines* in Rwanda in 1994 also seemed to show a very direct and clear link between the broadcasting of racial hate propaganda and subsequent violence; and the pattern has been repeated elsewhere since. Already in 1994, some Western theorists were calling for not only electronic jamming, but the physical destruction of such broadcasting facilities, particularly as they might have additional military uses. These arguments formed part of the context for NATO's controversial air strike on the RTS Belgrade television centre on the night of 22/23 April 1999, just one night after Milosevic's interview with KHOU-TV. Whatever its wider motives for carrying out this air strike (some of which may never be entirely known), NATO gave up in consequence considerable political credibility for its wider position of humanitarian action and not deliberately targeting civilians. Again, the argument for targeting RTS Belgrade (which was only off the air for seven hours) was apparently based on the belief that its hate propaganda was having a direct and immediate effect on events in Kosovo itself.

## UNDERSTANDING THE MEDIA

By way of a conclusion, if there is an overall theme to this discussion, it is that of the armed forces of democratic countries **understanding** the media, in all its forms; and also seeking to be understood. As it happens, in my own country of Great Britain a lot of work has been done, chiefly since the 1982 Falklands conflict, on understanding the military-media relationship. Also, and partly for historical reasons, the British media's relationship with its armed forces, although it is and should be adversarial, has not always been antagonistic. Commanders of the British contingent for the 1999 Peacekeeping Operation in East Timor have estimated that the ratio of journalists attached to British troops at some stages was approximately one-to-one, without serious trouble on either side. In February 2000 a closed-doors meeting of senior British officials and members of the national media regarding Kosovo took place in London, of which summaries have been published. This showed that on balance neither side felt that in the Kosovo conflict the other had seriously violated any explicit or implicit agreements about their working relationship, although of course there were

individual difficulties. This is not to suggest or recommend a 'British model' of military-media relations for other countries, simply because the circumstances of history will always be different. What is now a constant of military operations is that, at a very fundamental level, the role of the media must be properly understood.

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## *DISCUSSION*

*Squadron Leader Dave Pratt (RNZAF):* Would you care to comment on the role of the media as an influencing factor on military operations?

*Dr Badsey:* As any 18th Century constitutional theorist would tell you, and as I touched on briefly in my paper, the role of the media as an influencing factor is built into the fabric of our concept of civil society, which you as members of armed forces are employed and pledged to uphold. That is the broad context. On military operations, there are lines which can be crossed and which have been crossed. The episode which I know best of this happening still remains very polarised indeed between opinions. That is the circumstances in Sarajevo between 1992 and 1995, and the manner in which, by lobbying and pressure, the Bosnian Government won over enough members of the international press corps to run, as it saw it and as indeed members of the UN Protection Force saw it, a viable Psyops campaign through the international media. Senior members of the press corps, when asked whether they actually were aware that they were engaged in Psyops rather than reporting tend to lose their tempers and say that under the circumstances what they were doing was actually good journalism. Quoting from memory, on the one side Christine Amanpour, the CNN reporter, said, 'It drives me crazy to hear this neutrality thing come up', and that anyone who did not support the Bosnians was an accomplice to genocide. On the other side Lieutenant General Rose said, 'It is quite understandable that a small country fighting for its survival should have a propaganda machine. What is not understandable is that the international media should become part of that propaganda machine.' Those are the two sides of what is an unreconciled debate. Certainly, you will see even sub-state groupings, and even terrorist organisations, thinking globally in these terms, recognising how an action of theirs might have an impact on the world stage. There is nothing massively new about this, you can find such ideas in the theories of anarchists like Johannus Most in the 19th century; it is one of the main themes of terrorism. It is just with the increase in global communication and global media into the 21st century opportunities are there which are so much greater than before.

*Flying Officer Trent Morris (RAAF):* You said in the first part of your talk in regard to the CNN effect, that decisions were based on elite opinion as compared to the public, and yet just days before Australia sent troops to East Timor there was a public parade of somewhere between twenty and thirty thousand people marching through the streets of Sydney calling for troops to be sent. Can you qualify that in regard to the

point you made, because I might have just been confused, saying that it was that public opinion that lead to the elite opinion making the decision.

*Dr Badsey:* A nice example, I must admit, particularly as you are obviously familiar with that march and I was not! First, thirty thousand were involved – out of an Australian population of how many? Secondly, was this a genuine spontaneous popular march, or was it deliberately organised in any way? What we think happens is that, in democratic society, opinion forming is based on a number of loosely interlocking elites, of which some might actually include members of the government, and that on the whole it is those people who control the decision-making processes. It is actually **very** unusual to have anybody marching through the streets in this way, so I am delighted to hear of the example. Media coverage of such an event might act as a defining moment, a moment in which peoples' thoughts crystallise. If you will forgive a bad metaphor, it is like having a 'rain cloud' of opinion and then suddenly something will precipitate the rain. In much the same way, the pictures of the American soldier's body being dragged through the streets of Mogadishu were not the cause of the American pullout from Somalia. But, for example, General Colin Powell's memoirs are quite clear that this was a defining moment, in which what was already a general policy 'clicked' together. I think what you're describing is more or less that kind of circumstance, but we know very, very little about these interactions, even now. It is also extremely difficult to get hard data, but I suspect as computing power gets better into the 21st century, we will be in a much better place to analyse such data. I would put it this way: I doubt extremely whether the Australian Government had no policy and no intention whatsoever to intervene in East Timor, then that march took place, and as a result of it they changed their policy. I could of course be quite wrong.

*Squadron Leader Damien Gilchrist (RNZAF):* I would support your thesis you last annunciated there. It would seem bizarre that just a television hearing in a Texas television station would change the target list at 24 hours, especially in an organisation like NATO. You'll be pleased to know that you are visiting a very democratic country, a much nicer place than the former Yugoslavia, and here the media is controlled by two people, rather than one. Would you like to comment on the impact of private ownership and control of mass media, and we are talking worldwide media, and whether indeed there is a political elite there amongst that narrow ownership?

*Dr Badsey:* I don't know if you've had media training, but you have just tried to sneak past me what is known as the 'double question' – which is, you make a statement, which I do not agree with, but you don't ask me to comment on it, and then you go on to something else. If you don't mind, I would like to take your first point first, because otherwise I am tacitly agreeing with your statement. This is a matter of public record; you can find it by looking in the NATO Press Conference transcripts. On 7 April 1999 the Yugoslavs mounted a rather nice propaganda coup against NATO by briefly closing their borders so there were no refugees for television crews to film, and at the same time taking Western journalists in Belgrade out to bridges lined with people with 'NATO Target' on them. This was, I think, a deliberately coordinated political and propaganda effort that caused some frustration. On the following day, 8 April, at the daily NATO Press Conference run by Jamie Shea, his military partner Air Commodore David Wilby of the RAF announced that NATO policy from now on was to demand – I emphasise 'demand' – six hours of air time on RTS Belgrade daily,

three in the afternoon and three in the evening, in order to redress its propaganda balance, or there would be NATO military action against it. NATO then proceeded to target unmanned relay stations. We will not know until the documents are released and the evidence is out, perhaps we will never know even then, but it certainly appears from this that the strike against RTS Belgrade was part of that declared NATO policy, not a snap 24-hour decision.

On the second issue, everybody more or less expected that with deregulation in the late 1970s and the 1980s the media would be globalised, and that happened. What we did not expect, and this is perhaps an interesting theme for globalisation in general, was that because of consumer pressure it simultaneously globalised and fragmented, and so became even more parochial. That is to say, large commercial organisations own large parts of the world's media organisation but this is not reflected in any kind of global news policy or global treatment of the news by the media. In fact the news media reporting in the United States now, and during the last decade, is judged to be more parochial and more insular than it was in the 1960s. If anything the focus for world news is switching back to London, which we find rather interesting.

*Captain Jeff Malone (Army):* In the Information Operations doctrine within the US, the UK and my own country there is a strong distinction drawn between Psychological Operations, which is deliberate targeting of audiences, versus Public Information, which describes the military's relationship with the media. Do you feel that to be a false dichotomy or, if not, then what in fact is the difference?

*Dr Badsey:* Oh dear, this is one of the most difficult questions in the subject – you're good! I am going to have to make a very firm distinction here between my own opinion and British Ministry of Defence policy. My own opinion is that the distinction is absolutely critical, because Psychological Operations inevitably shades towards subversion. In the mid-1990s the United States came up with a very broad definition of Psyops indeed, to include areas which more traditionally we would put within Media Operations and Public Information. The British signed up to this, so did the Germans, with some reluctance. I think it is fair to say that there was a certain amount of debate about this and nobody is entirely happy. Within a Peacekeeping Operation or Peace Enforcement Operation, the classic structure now is to have a Public Information cell – or as we now like to call it a Media Operations cell – dealing with the media on very much a public basis in which honesty is paramount, trying to sell them the story but without deception. This is coordinated with another cell providing Civic Information to the local people, which can be everything from producing pamphlets, leaflets, notices saying 'This Way to the Fresh Water' and so on, to involvement with the local media. At present, due to the adoption of American doctrine, this Civic Information cell falls within the province of Psyops. In fact the US Army's 4 Psyop Group are extremely good at it, they are by far the best and most well-equipped people in the world. But simply attaching the term Psyops to such activities, and having them carried out by people who are used to thinking in Psyops terms, causes automatic problems that have not yet been resolved. To repeat, my personal view is that the distinction must be absolute; that Psyops implies deceit and that any dealings with the media must be on the basis of honesty and openness, if only for constitutional reasons.

# AIR EXCLUSION ZONES: AN INSTRUMENT OF ENGAGEMENT FOR A NEW ERA

BRIGADIER GENERAL DAVID A. DEPTULA

## INTRODUCTION

No fly zones (NFZs) have evoked a series of questions regarding their utility and costs. Are they a manifestation of political dilemmas with no defined end-state, where tactical action seems necessary, but only in a limited context? Are they 'regime suppression operations' designed to keep tyrants in check while a search commences for alternative solutions? On a more practical level, are NFZs a hindrance to maintaining peak wartime readiness training, and a contributor to a high operational tempo that is driving personnel out of the military? Do they, in sum, merely convert jet fuel into noise?

On one level, scepticism about NFZs is understandable. Yet, that scepticism may stem from a narrow interpretation of NFZs that ignores their broad utility to a nation's foreign policy strategy. For example, some view NFZs solely as a way to position forces for the purpose of minimising response time if it becomes necessary to apply force. This and other tactical views ignore two fundamental strategic questions. First, what ultimate purposes do no fly zones serve and how effectively do they support the national or coalition security strategy? Second, is the no fly zone concept an effective means of accomplishing the security objectives of a nation or coalition of nations? The following pages will illustrate that NFZs are proven, highly effective tools of national security policy, and are particularly well suited for coalition operations.

No fly zones have served multiple purposes from their beginning:

- To deny an adversary the local use of airspace, thereby controlling and containing him, and as a result contributing to improved regional security.
- As a means to exert pressure on an adversary to comply with UN or coalition demands.
- As a means to build and foster long-term strategic partnerships with coalition allies.

During the 1990s, aerospace power in general and no fly zones in particular have fulfilled these goals. The continuing transformation of modern aerospace power will enable greater efficiency and new concepts of operations (CONOPS) to conduct NFZ operations. No fly zones also have been key in contributing to a post-Cold War US national security strategy based on engagement with the goal of limiting the use of

force while still effectively countering aggression. In the face of NFZs, local tyrants were kept busy imploding rather than exploding, both politically and militarily. In the case of American strategic policy, the successful use of NFZs increasingly encouraged Congress and the American people to support a more pro-active foreign policy in order to secure regional stability, leading to a lessening of the probability of major regional conflict. The purpose of this paper is to provide thoughts about how peace-loving nations can work together to formulate plans, programs and concepts of operation that highlight aerospace power as an advantageous means to secure coalition interests, protect our nations' sons and daughters, and secure peace for the new millennium.

To support these themes, this article will move from the abstract to the specific. It will first discuss the broad, philosophical issues associated with no fly zones, introduce a new, more comprehensive term for them, define that term, and then move to the specifics of use, potential, and challenges associated with NFZ operations. The philosophical discussion to which we now turn will first attempt to answer some basic questions. How and why do no fly zones exist, what might be a better term for describing what they do, and how should we define them? After answering these basic questions, the discussion will focus on the central role NFZs have played in both shaping and supporting strategic-level security objectives in a post-Cold War world.

## NO FLY ZONES - A BASIC DEFINITION, AND THREE FUNDAMENTAL TRUTHS

No fly zones are a modern phenomenon. They are distinguished from traditional air power missions by their imposition in another nation's airspace, absent high intensity war, surrender, or occupation. There were similar uses of air power between the two World Wars by the British Royal Air Force (RAF) in air control operations over Somaliland, Mesopotamia, and Aden.[1] At that time, the RAF used air power to enforce colonial rule, ensure unmolested travel and sanctity of trade routes, and generally maintain order among the tribes in the region.[2] Yet these operations differed greatly from the NFZ operations at the end of the 20th century. For instance, the tribes of that era had no air forces, no air defences and no sovereignty.[3] During the Falklands war in 1982, the British armed forces imposed a total exclusion zone in the area of their operations in the south Atlantic, but this was in concert with force application from all elements of military power – air, sea, and land. Not until the end of the Gulf War in 1991 did we see no fly zones assume their expanded, modern form.

The absence of NFZs prior to 1991 can be explained on both political and technological grounds. The Soviet Union, as a near-peer military competitor, would have resisted the use of such a pro-active tool of diplomacy by the United States and its allies almost anywhere in the world. The ever-present danger of local conflicts

1 David W. Parsons, 'British Air Control: A Model for the Application of Air Power in Low-Intensity Conflict?' *Airpower Journal* Vol VIII, No 2, Summer 1994. Available: http://www.airpower.maxwell. af.mil/airchronicles/apj/apj94/sum94.html.

2 *ibid.*

3 Colonel Jan-Marc Jouas, 'No-Fly Zones: An Effective Use of Airpower, Or Just a Lot of Noise?' unpublished paper, Weatherhead Center for International Affairs, Cambridge, Massachusetts, June 1998.

escalating into a nuclear showdown dampened the appeal of no fly zones to those who might have employed them on a local level. Perhaps most importantly, air power was a technologically blunt instrument until the precision and stealth revolutions of the late 20th century. Until that point in time, air power lacked the 'fidelity' needed to perform nuanced attacks against transitory, difficult-to-reach targets – it lacked the ability to produce a middle level category of diplomatic effects. The current Revolution in Military Affairs (RMA) involving stealth and precision enabled new concepts of operations, best represented by the effects-based, parallel warfare that served as the basis for the Gulf War air campaign. With the demise of the Soviet Union and the rise of the RMA inaugurated by the transformation of aerospace power, no fly zones became both possible and desirable.

Despite their increasing use, no fly zones still remain undefined, leading to some degree of analytical confusion. It is important, therefore, to identify what a no fly zone is and what it is not. While an NFZ may be associated with an 'air occupation', that term suggests legal responsibilities on the part of the 'occupier' that are best avoided. Nor should it necessarily be considered a synonym for an 'air intervention', which has its own legal and moral implications. Instead, a no fly zone may be better described as an *air exclusion zone* (AEZ), a term that more accurately captures its broad, strategic meaning.

An AEZ is a territorially-bounded area in which the target nation's air and surface operations are controlled, even to the point of preclusion, against their will as an extended tool of diplomacy. More specifically, an AEZ is an area in which the target nation's sovereignty has been expropriated with the goal of producing a broad set of political effects. This definition is more universally applicable than the traditional 'no fly zone' implies, because it encompasses a wider spectrum of political use to describe just what air and surface activity would be permitted or controlled in the AEZ, under what conditions, the approval authority and process, and a more comprehensive set of political metrics by which one could measure their utility. In fact, the term *air control zone* is probably an even more accurate definition of the concept we are describing; however, because it is a basic term in the aviation lexicon its use might be confusing. This new term and its more broad definition help focus the discussion. It reinforces the idea that enforcement aircraft only occupy airspace, not a nation's soil. And yet, by operating within this space, aerospace power **controls** the surface without occupying it. This distinction is important when we consider three related truths about the air exclusion zone concept.

- **Air exclusion zones are intrusive acts of diplomacy.** They are less intrusive than ground forces and other forms of power projection, but they do expropriate the sovereignty of a nation or coalition.

- **Air exclusion zones invariably involve limited operations conducted by limited means to secure limited ends.** The preferred end-state of the three major coalition AEZs in the 1990s (described below) was to **contain** the expansionist behaviour of aggressors. This innovative form of regional control or containment, however, did not mean that AEZ operations would guarantee compliance with UN Security Council Resolutions. Control, containment and

compliance have never been interchangeable concepts, although critics of AEZs regularly confuse them.

- **Air exclusion zones are not designed to work alone.** They must always be integrated into national or coalition strategy. In other words, they must work in conjunction with other forms of power to circumscribe, or ideally, control the political-military behaviour of an adversary even while they foster deeper coalition ties. This attempt at control may last for a specified amount of time, or it may well be open-ended.

In any case, the success of an AEZ will depend on:

- how creatively and aggressively political leaders use other instruments of national power,
- the general political environment or context of the AEZ,
- the specific political and military objectives sought by those who use these zones, and
- the degree of control they are willing to exercise in light of those objectives.

Now that we have established a working definition of an AEZ and engaged in a short discussion about its political nature, the next logical step is to explain how and why air exclusion zones exist.

## AIR EXCLUSION ZONES EVOLUTION OF PURPOSE AND VALUE

Following the end of the Gulf War, the first AEZ was established for the express purpose of supporting the Operation PROVIDE COMFORT humanitarian relief operations in Northern Iraq. It was established by association with United Nations resolutions. Colonel Jan-Marc Jouas described the basis for establishment of this particular no fly zone as follows:

> The United States relied on the provisions of UNSCR 678, passed in November 1990, which authorized member nations to use 'all necessary means' to effect the withdrawal of Iraqi forces from Kuwait and 'restore international peace and security in the area'.[4] The repression of the Kurds

[4] Security Council Resolution 678 authorised the use of force to implement UNSCR 660: United Nations Document S/RES/678 (1990) [hereinafter UNSCR 678]. Available: gopher://gopher.undp.org/11/undocs/scd/scouncil. Security Council Resolution 660, passed shortly after the invasion of Kuwait in August 1990, demanded immediate Iraqi withdrawal from Kuwait. United Nations Document S/RES/660 (1990) [hereinafter UNSCR 660]. Available: gopher://gopher.undp.org/11/undocs/scd/scouncil. In 1996, White House Press Secretary Mike McCurry reaffirmed the United States position as follows: 'We relied ... on authority for our no fly zone on our interpretation of UN Security Council Resolution 688, using the enforcement mechanisms that were available in UN Security Council Resolution 678, and our interpretation of those two resolutions as a basis for the no-fly zone has not been challenged.' Mike McCurry,

> was viewed as a threat to the peace and security of the area, and thus all necessary means, including the enforcement of a no fly zone, was justified. Any Iraqi aircraft that entered the zone were subject to attack under Article 42, Chapter VII, of the United Nations Charter, which authorized the use of force to restore or maintain peace.[5] In addition, under Article 51 of the United Nations Charter, Allied aircraft patrolling the no fly zone were authorized the right of self-defense, and could attack Iraqi aircraft that posed a threat to them.

The AEZ also provided cover for coalition surface forces as they established a protection zone for the Kurdish refugees on the ground. Since the end of Operation PROVIDE COMFORT in 1996, Operation NORTHERN WATCH (ONW) has operated independently of ground forces to curtail and contain Iraqi aggression and enforce UN Security Council Resolutions (UNSCR) 678, 687 and 688. Operation NORTHERN WATCH succeeded PROVIDE COMFORT, which ended in December 1996. Approximately 50 ONW aircraft and over 1,400 personnel from the US, UK and Turkey are charged with enforcing the NFZ north of the 36th parallel in Iraq and monitoring Iraqi compliance with UNSCRs 678, 687, and 688.

The second AEZ was closely related to the first. Called Operation SOUTHERN WATCH (OSW), it was established in 1992 over Southern Iraq as a means to monitor Iraqi compliance with UNSCR 688. Operation SOUTHERN WATCH began operations in August 1992 to ensure Iraq's compliance with UNSCR 688 that demanded Saddam Hussein end his repression of Iraqi civilians. The first OSW sortie flew on 27 August 1992, less than 24 hours following the announcement of the start of the Operation by President Bush. The coalition supporting OSW prohibited all Iraqi fixed and rotary wing military flight operations below the 32nd parallel, and in 1994 was extended to flights below the 33rd parallel.

For nearly ten years, forces deployed in support of ONW and OSW have demonstrated their potential as a forward air presence able to apply force rapidly and selectively – with great precision – in support of US and coalition policy objectives. In 1994, for instance, AEZ forces constituted the leading edge capability for Operation VIGILANT WARRIOR, which responded to a potential Iraqi invasion build-up in Southern Iraq. The threat posed first by OSW air forces and then by VIGILANT WARRIOR deployments resulted in the recall of Iraqi forces deployed near the border of Kuwait. Since late 1994, coalition AEZ forces have also supported UNSCR 949 that prohibits Saddam Hussein from deploying military units south of the 32nd parallel – establishing a stabilising extended military 'buffer zone' between Iraqi forces and the borders of our regional allies. In December 1998, AEZ forces supported the Operation DESERT FOX air operation.

These operations demonstrated the value of AEZs as a means to position forces to minimise response time when it became necessary to threaten or apply force. Critics of

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'Press Briefing by Mike McCurry and Mark Farris', 3 September 1996, *White House Press Release Database*. Available: http://library.whitehouse.gov/Search/Query-PressReleases.html.

5 Michael N. Schmitt, 'Clipped Wings: Effective and Legal No-Fly Zone Rules of Engagement', in Michael N. Schmitt (Ed), *The Law of Military Operations*, Naval War College Press, Newport, 1998, p 241. See also the United Nations Charter, available at: http://www.un.org/Overview/Charter/contents.html.

AEZs tend to view AEZ operations only in this limited context. Because overt aggression of large magnitude has been episodic, some feel the resources required to sustain AEZs might be better spent at home, which would allow training to greater proficiency levels and would reduce high operational tempos. However, taking a broader strategic view, AEZs have established themselves as means to achieve effects much greater than their capacity to simply resist major force build-ups.

Air exclusion zones enable members of a coalition to demonstrate commitment to a common cause in a visible way, yet at variable levels of commitment depending on a participating nation's individual national interests, and/or military capability. Aside from exerting a credible, immediate threat of precise force application, AEZs provide policy makers options to impose a high or low visibility monitoring regime, apply pressure to comply with UN or coalition demands through the expropriation of national sovereignty, or enable other effects and operations **with minimal risk to coalition personnel, at lower cost, and with fewer forces** required to achieve similar effects by traditional means – the occupation of an adversary's territory. These effects can collectively contribute to regional stability by containing and deterring the adventurism of hostile actors. This is certainly the case in Northern and Southern Iraq where ONW and OSW significantly contribute to stability in a region where it is not politically feasible or desirable to introduce ground forces.

In conjunction with trade sanctions against Saddam Hussein's regime, AEZs are a means to contain his military potential, limit his ability to destabilise the region, heighten uncertainty in his mind on coalition responses to his potential actions, and therefore inhibit his proclivity for overt aggression. For these reasons AEZs have become attractive as options to national command authorities. They contribute significantly to the accomplishment of coalition security objectives in North-West and South-West Asia, are a vehicle to foster long-term strategic partnership among coalition allies, and have application in other situations (Bosnia, Kosovo, and the AEZ option that was considered as a possibility to stabilise the most recent Cyprus crisis involving the importation of S-300 [SA-10] missiles are examples). While AEZs can be expensive both in terms of monetary costs and increased operations tempo, one has to consider the costs of a Saddam Hussein unconstrained and uninhibited. In other words, **not** being there to execute AEZ operations may result in aggression that would be much more costly in terms of what it would take to reverse the consequences of aggression – this is the essence of the US national security strategy of engagement.

## AIR EXCLUSION ZONES - ROLES AND POTENTIAL

As coalition AEZ operations in North-West Asia, South-West Asia and in the Balkans have shown, the AEZ concept possesses strategic as well as tactical value. While aerospace forces cannot physically occupy terrain, they exert substantial control over an adversary's **military and political options.** Air exclusion zones, properly conceived and executed, can achieve a wide range of desirable political effects. Modern air exclusion zones can accomplish any of the following roles, either singly or in combination:

- Enforce United Nations or regional mandates, including those tied to peacekeeping operations.

- Support a nation's foreign or coalition policy and help impose its will, either directly or indirectly, on an opponent. In other words, ensure that potential aggressors are contained, either politically and/or militarily.

- Deter, contain and control an opponent's military forces to minimise aggression against their neighbours as part of a regional stability strategy.

- Provide a core capability to rapidly halt organised armed aggression before it expands into high intensity, theatre-level combat.

- Establish 'No Manoeuvre Zones' against enemy armour formations, heavy firepower units, or air defence components. (This capability will only grow with the growing fusion of space-based sensors, JSTARS, UAVs, and other C4ISR capabilities over the next decade.)

- Expropriate an adversary's aerial sovereignty and help control, rather than occupy his territory. This capability allows one to pursue various diplomatic objectives without necessarily having to deploy land forces that typically involve higher human, political, and economic costs and risks. Furthermore, land forces once deployed have historically been more difficult to withdraw. Aerospace power, in contrast, typically involves fewer political-military costs and risks, and is more flexible in terms of adjusting levels of force application, pressure and engagement.

- Impose high or low visibility monitoring regimes.

- If air attacks are required in response to overt aggression, create positive functional effects beyond the immediate area of engagement. (ONW response operations in 1999, for example, motivated the Iraqis to change their behaviour in ways that significantly reduced the threat to coalition aircraft. They re-positioned their longer range SAMs outside the AEZ for fear of losing them – a positive functional effect for coalition forces.)

- Fragment or slow the effects of internal repression (by airlifting supplies; protecting civilians from aerial bombardment; providing air superiority for other missions, including airborne intelligence operations, etc).

- Complicate or defeat camouflage, concealment and deception efforts before they minimise your ability to locate and identify hostile forces in the future.

- Restrict an opponent's training regimen so that his combat skills atrophy.

- Serve as a confidence-building measure that emboldens friends and allies to expand their military operations in the future (as NATO did in Bosnia).

While certainly not reasons to impose an AEZ, the following are collateral benefits:

- *Provide unique and frequent large-scale composite, combined and joint training* not otherwise, or infrequently, available.[9]

- Function as a 'real world' laboratory for joint and coalition experimentation, and for the development of innovative concepts of operation.

AEZ aircraft can perform the above functions not only because of their proximity to areas of operation, but also because of their unique capabilities. In an era where speed and lethality frequently determine the success of military operations, the air weapon has the ability to rapidly interject itself wherever required. It also has the ability to 'shift gears' quickly – from routine surveillance activities to lethal applications of force – and to combine effects-based peacekeeping with effects-based warfare. As a result of these capabilities, AEZ aircraft help control the terms and conditions in which subsequent political-military actions unfold. They also illustrate the strategic value of air exclusion zones in the post-Cold War world.

In short, air exclusion zones can be employed to support national or coalition policy objectives and help impose one's will, directly or indirectly, on an opponent. Furthermore, they offer policy makers certain advantages over more traditional means of projecting power. For example, AEZ forces are inherently less intrusive than ground and even naval units, enabling diplomatic initiatives to stabilise potential conflicts. They also provide a tangible sign of national commitment and intent with less political and operational cost and risk, making them a viable means for gaining and maintaining coalition cohesion. Finally, air exclusion zones do not require a continuous military presence in the area of operations to achieve intended effects. While some air power critics are apt to marginalise the influence that is exerted by the 'temporary' presence of aircraft 'transiting' an adversary's airspace, results of AEZ operations over Iraq and the Balkans prove that the real measure of merit is not continuous physical presence, but the **effects** that they achieve.

Another important advantage of AEZs is that occupying airspace is more like occupying territory than is a maritime presence in international waters. An AEZ inherently expropriates an element of sovereign authority on behalf of the global community. The subject state is declared to be less than a full member of the family of nations, unfit to govern in at least this one aspect, and placed under a multilateral edict

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9 With respect to training, different AEZ operations experience different levels of training. At ONW aircrews are able to brief together, fly together as a composite force, and debrief together. Each AEZ mission is a large-force composite training event, and each aircraft type performs combat events every day, either real or practice. The mission commander and flight leads got valuable experience in orchestrating employment of a large composite force that was not possible at most home units. In addition to the daily combat responses or exercises scheduled in the AOR, full-up training is conducted during specified training days each month. This includes full-up Dissimilar Air Combat Tactics training that is often not available at the same frequency at home units. *A typical quote from a deployed squadron commander end of tour report, 'The most* surprising aspect of the deployment was the superb training we were able to get while accomplishing the mission. The 14 pilots who deployed here are more proficient now, at the end of the rotation, in precision munition and targeting pod employment than when they left Hill Air Force Base. The amount of time spent in the AOR combined with numerous difficult to find targets resulted in every pilot increasing his proficiency.'

enforced by the imposition on an AEZ. This is a surrogate for war that clearly establishes the rogue status of the subject state. One additional point along these lines is the extent to which AEZs fall under the rubric of 'shaping' the international security environment, a fundamental tenet of the US national military strategy for which surface force advocates have in the past claimed an exclusive capacity. AEZs that are established by coalition air forces are especially valuable means for shaping and influencing regional actors, and are much easier to organise and operate together effectively than similar coalition efforts employing ground forces. In other words, AEZs have become a major foreign policy tool, highlighting aerospace power as a robust instrument of power intertwined with policy and diplomacy.

## POLICY IMPLICATIONS

AEZs have become an incontrovertible symbol of US political and military engagement abroad. As a result, they present airmen with an opportunity to highlight national security actions that require advanced aerospace platforms, sensors and munitions. Stated differently, the US Air Force would not have been able to conduct their part of the coalition AEZ operations cited above without the advanced air and space C4ISR platforms, communications and data links, and precision munitions that it has developed and fielded over the past 20 years. While this is self-evident to airmen who have executed AEZ operations, it is apparently not as clear to others who claim to be experts on aerospace issues. For example, many who are leading the fight to delay or terminate cutting-edge aerospace modernisation programs often suffer under the misperception that it is only advanced air-to-air threat systems are driving Air Force aircraft modernisation requirements. From nearly ten years of experience employing AEZs, a principal concern of the participating aircrews is not limited to adversary fighters, but includes surface-to-air missile (SAM) systems. Advanced SAM systems that do not require the intensive training and degree of proficiency that pilots of modern fighter aircraft need to be extremely lethal are a significant threat that is increasing **today** – witness the concern over the acquisition of SA-10 and other double-digit SAM systems to nations that have the hard cash to pay for them.

Just as we have seen a considerable change in the value of the AEZ concept over the past decade, advances in aerospace technologies and capabilities will offer policy makers improved means to conduct these operations in the future. For example, the stealth and the precision attack capabilities of F-22s carrying small smart bombs will reduce operational and personnel tempos across the force. Missions that today require F-16CJ HARM shooters, F-15E/F-16CG PGM carriers, and F-15C air superiority platforms will be accomplished in the future with the multi-mission, versatile, highly survivable F-22. In fact, the F-22 and other advanced aerospace weapon systems will change the way we conduct AEZs in the face of the ever-increasing spectrum of surface, air and space-based threats. To defeat potential adversary anti-access strategies, F-22s teamed with long-range precision strike platforms such as penetrating B-2s carrying the joint stand-off weapon (JSOW) and the joint direct attack munition (JDAM), and B-52s carrying next-generation stand-off cruise missiles will provide policy makers the ability to rapidly project decisive power into any theatre. We can no longer assume that we will have the luxury of deploying large contingents of surface forces into a theatre without a determined adversary threatening to employ or actually

using 'asymmetric' weapons, such as ballistic and cruise missiles, mines or weapons of mass destruction. Advanced stealth and other capabilities resident in the F-22 will be the linchpin for establishing AEZs and deterring and defeating enemy 'anti-access' strategies.

In addition to modern platforms and munitions that will enable increased effectiveness with a smaller forward-deployed footprint, the incorporation of information operations tools and techniques to supplement the physical presence required to enforce AEZs will achieve further effectiveness and resource efficiencies. The advent of unmanned aerial vehicles equipped with a range of sensors and lethal weapon systems, supplemented by space-based capabilities, may enable future air component commanders to maintain a 24-hour, 365 days a year presence over an adversary's domain – ready to find, detect, track, report or shoot as required.

While technological capability has an enabling role to play in AEZs, the evolution and potential of innovative, more effective and efficient AEZ CONOPS will also be driven by politically-driven rules of engagement (ROE). Rules of engagement, which are subject to agreement with the nation hosting the AEZ forces, are the visible extension of coalition political and strategic objectives. Future ROE will have to promote simplified coordination, proper integration, and aircraft identification. Such ROE may require pre-existing agreements with host nations on when and where to use force, but their benefits – decentralised execution, for example – would justify the agreements.

It will be incumbent upon politicians and airmen to articulate how aerospace people and systems can accomplish the mission. If host nation political interests threaten to systematically restrict CONOPS short of what will achieve the desired political effect, then it may be prudent to pursue AEZ capability independent of the need for in-theatre basing. Globally-capable aerospace power could dramatically increase AEZ potential as a tool of strategic influence and deterrent effect and might even serve to catalyse increased in-theatre support as its effects become evident. For example, rather than flying constant orbits, a change in ROE that would allow coalition forces to respond, at a time of our choosing, with a precision attack on an adversary base from which the offender launched aircraft. This option would offer greater deterrence at a much lower operations tempo. The evolving capability of long-range, rapid aerospace expeditionary forces – along with a commitment to exploit space as a means to rapidly achieve effects against a target nation, in conjunction with cyber-effects and facilitating ROE – has the potential to provide the capability to enforce an air exclusion zone with significantly smaller numbers of aircraft, or even from outside the theatre.

AEZs can be an important part of a coherent foreign policy if they preserve a clear means-ends link. That task, like all issues of diplomacy, is complicated for one nation, but becomes even more so when operating in a coalition. Assuring restraint, security, and unity of effort in an operation with multiple actors that are seeking limited objectives will always be a challenge. Therefore, some cautions are in order. Nebulous interests and tentative application of aerospace power will always be vulnerable to the campaign-ending power of a singular, dramatic event or a slow erosion of support when too many means result in too little ends. Additionally, to sustain maximum impact, AEZs must minimise serving the 'politics of gesture'. The appearance of action rarely, if ever, serves as a substitute for the real thing. On the other hand, guarding against mission creep and/or mission expansion will also remain a challenge

for policy makers. Those who use AEZs must be clear-headed about their utility in political signal sending, for they may send the wrong signal to their opponent. Future foes may agree with General Colin Powell, who said, 'As soon as they tell me it is limited, it means they do not care whether they achieve a result.' AEZs are an engagement tool, and great care must be taken to not dilute their potential by employing half-measures.

## SUMMARY

Critics of no fly zones tend to view them as transient phenomena that accomplish limited, tactical objectives. Correspondingly, they conclude that continuing no fly zones makes excessive demands on an already heavily tasked military, and, as a result, *should be terminated as soon as possible*. These views may be based on a narrow understanding of the concept that ignores the broad diplomatic advantages provided by modern aerospace power.

A more appropriate, comprehensive understanding of these operations can be captured by the term *air exclusion zones*. Over the period of their existence, the use of AEZs with minimal risk to assigned personnel and with reduced cost in terms of resources and personnel relative to traditional surface occupation has transformed them into a desirable option for policy makers. Perhaps it is prudent to quell the urge to terminate ongoing AEZs, and to put more energy into exploring ways to execute them in a more effective and efficient manner. While there is a cost of 'being there', there is also a cost – likely a very much greater cost – of **not** being there.

Throughout the 1990s, air exclusion zones have been a high visibility means of political-military engagement. They do not merely convert jet fuel into noise, but have become an integral part of America's national security strategy. They communicate that coalition nations are willing to support legitimate policy objectives by committing their resources to shape regional events with the goal of preventing major regional conflict. AEZs protect us from over-extension, but still have the power to keep miscreants 'in a box'. AEZs do all these things by flexibly fulfilling a variety of roles as an adjunct, complementary tool of diplomacy. They also illustrate that the United States is not a classic imperial power interested in acquiring territory, while at the same time provide policy makers a diplomatic option between doing nothing, unleashing protracted punitive strikes, or committing to ground intervention. Rather than disparaging them, one might take a broader, strategic view and instead conclude that AEZs represent a very capable, innovative approach to engagement and international diplomacy.

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## DISCUSSION

*Air Commodore Geoff Shepherd (RAAF):* General, thanks for your presentation, it was very informative. I understand the reactive nature of your strike operations, but it would seem to me that you would need to have some predetermined target sets. So could I draw you out on your targeting processes, specifically with respect to timelines and approval.

*Brigadier General Deptula:* Forgive my poor hearing, is your question in respect to targets, and how, in order to be effective we need have information about what the target sets were – is that correct? OK. Well essentially, as you might expect without going into too much detail here, we had an ongoing intelligence process that made us aware of what would pose a potential threat in the area of operations. We were prepared, to the degree that we could be, of what was in the area, and we had pre-identified targets that we were prepared to respond against in the event the Iraqis shot at us. Here's a situation that I think everyone in here recognises. That is the criticality of intelligence – not just the criticality of intelligence, but the need for intelligence and operations to be merged into one coherent whole. We have got to get rid of the separateness of intelligence and operations, and meld them together, and the intelligence folks need to understand that they haven't succeeded just because they have acquired a piece of information – they cannot celebrate until the weapon has hit the desired target. One of the areas we are continuing to work on very hard and will need to continue to focus on, and this gets back to the specific of NORTHERN WATCH, is decreasing the timeline of arrival and timeliness of information to the pilot who is being threatened by a particular weapon.

I'll tell you one anecdote. After the NORTHERN WATCH composite force took off one day we got an overhead image of an SA-2 site, and we quickly relayed that information to the F-15Es that were airborne. We told them the coordinates – they were carrying AGM-130s at the time, and in order to launch the weapon you need to have some specific information as to target location. They did not have the image because, obviously, it had arrived after they had taken off, but we talked them to the location and they shot the weapon on GPS coordinates. As the weapon was coming into the target area, the weapon system operator was expecting to see an SA-2 target tracking radar (TTR) right under the crosshairs. Well, it wasn't there but he could clearly see in the field of view three SA-2 TELS (transporter erector launches), with weapons on them, and so he moved the AGM-130 up and took out one of the TELS. It turned out we were extremely fortunate because the first time that the folks saw this information – the down link station for the overhead – to the time that it was radioed to the aircraft was only two hours and fifteen minutes, but in that two hour and fifteen minute period – and it was just coincidence because the Iraqis didn't know that we had that information – they had moved that SA-2 TTR to another location. So, timeliness of information with respect to mobile targets is becoming a very critical need. Now this is nothing new – this is the same problem and challenge that we had during the Gulf War in trying to chase down Scuds, but we are getting better and better at it, but it is still taking too long as you can see from this example.

*Wing Commander Despina Tramoundanis (RAAF):* Sir, I was interested to note your five team analogy when you were talking about the football teams. However, I was also

interested to note no mention of the sixth team that occasionally has a propensity to invade the football pitch – Turkey. I was wondering if you would care to make some comments on the incursions of Turkey into Northern Iraq from time to time – what effects that had on the health of your coalition.

*Brigadier General Deptula:* It's a good question. Actually they are one of the five teams, but that depends on how you count. They are members of the coalition and, frankly, your question will allow me to address the importance of building trust. The current situation with respect to the Kurds is clearly a delicate one and there are groups that have very specific concerns, but when they [Turkey] were conducting operations in Northern Iraq against the PKK, we had no problem with that. The PKK is a declared terrorist organisation. So as long as we understood what they were doing – and in fact it was pretty easy to convince us because they were allied with Barzani's KDP folks in taking down the PKK – it was not a problem. That understanding led to us not having to cancel missions because of a common understanding of what was going on in the area. In the past, there was a tendency to sometimes not let missions go as a result of Turkish operations in Northern Iraq. However, we established a series of operating agreements based on each of our respective missions, and worked out air space deconfliction procedures. As a result of this agreement we were able to continue Operation NORTHERN WATCH missions.

*Dr David Heilbronn (DSTO):* Having listened over the last couple of days, we see far more threat from surface-to-air missiles, really, than from opposition fighters. Australia is about to go into Air 6000, which is going to replace its capability with some air superiority or, alternatively I guess, some SEAD capability. What is your advice to us? Which should we be putting the more emphasis on, the true local air superiority role or suppressing enemy air defences *à la* Prowler and whatever else? What is your guidance?

*Brigadier General Deptula:* That's a great question. There's not a simple answer, and we are wrestling with similar kinds of challenges in the United States as we look to follow-on systems to the EA6B. I would suggest that you view the situation not as an 'either/or' kind of answer – it's not just about air-to-air and it's not just about surface-to-air. I would like to put it into context of anti-access, which is a terminology that is floating around the Washington DC beltway. Some folks believe potential adversaries will be able to gain systems that will deny us access. They will include things like advanced air-to-air aircraft and advanced double-digit SAMs. I think you need to take a holistic view and that is one of the reasons that we are developing the F-22. It combines stealthiness with super cruise to be able to defeat anti-access strategies by shrinking threat envelopes to the extent where they are not really effective. I am a huge advocate of stealth – I saw how well it worked in the Gulf War. I recognise that it is expensive individually, but in terms of overall effect it's the cheapest way to go eliminating the necessity for large force packages of support assets. Instead of having a separate aircraft that provides jamming distinct from the aircraft that will give you the ability to apply force, I think that having both on one platform ultimately is going to decrease overall costs. So if we can combine the attributes of what in the past we have used separate systems to accomplish, into one system – while that system might be on a unit cost basis higher than the separate systems – and if you think about achieving the specific effect of attaining control in an anti-access situation, it will ultimately be more

effective, and less costly. So, a combination of stealth, and electronic countermeasures in the same aircraft is the best way to crack that nut in the most affordable fashion.

One more thought on that last question, and I think I mentioned it earlier, but we need to quit thinking about and evaluating systems on the basis of individual unit cost, and think instead what provides you the most effect; or look at cost per target engaged, as opposed to cost per unit platform. One of the challenges in the United States debate over the efficacy and value of the B-2 is cost – detractors talk about the enormous cost. But if you look at it in terms of it being able to engage sixteen separate desired mean points of impact against a target set seven thousand miles away from its starting location, I think you will see it is one of the most cost-effective weapon systems ever built. If you start at the target location and then you start hitting the cash register to account for all the non-stealthy short-range systems and support infrastructure and supplies that it would take to hit an equivalent number of targets you'll run up a huge bill, real quick – one much larger than the cost of what it would take to do it with the B-2.

*Squadron Leader Mick Aspinall (RAAF):* You talked about employing an expeditionary force and some of the challenges you faced in rotating personnel in and out. If we could get your thoughts on two cases where you are taking three sets of specialists – land, sea and air – and integrating them into an expeditionary force, as against taking a unit that trains as an integrated force, *à la* the Marines, I guess in the best case. And, perhaps relevant to our situation here in Australia as a potential coalition partner, how you see the need for our involvement, for instance, and if you could address, particularly at the operational level, involvement in overseas exercises working at that operational level and the benefits you see flowing from that.

*Brigadier General Deptula:* Obviously the challenges increase the more disparate the types of forces that you are going to command. In NORTHERN WATCH we had components from each one of the Services – the Navy flew EP3s and EA6s, the Marine Corps rotated EA6s, the Air Force was the principal component, and we had a detachment of Patriot missiles provided by the Army. The focus of NORTHERN WATCH was an air centric operation, and it was very easy to get everyone on the same sheet of music. This can become more and more difficult and challenging as the nature of the operation expands beyond one domain. Increased training in terms of joint exercises will gain the familiarity and the understanding of the individual components and as result you will be able to operate together in a much more effective fashion when you do have to deploy together. A large case that comes to mind is DESERT STORM – on a major theatre war level not only just all the Service components, but the members of different nations were involved. It was so large an operation that in some scenarios you could not practise everything, but you could practise pieces. Cost is going to be an inhibiting factor in having full-scale joint exercises. So one of the things that we can do, at least at a minimum, is to exercise joint and combined headquarters components of potential joint operations, or joint task forces – that's generally where things get 'gummed up' anyway. So joint and combined training is probably the best way to prepare for joint and combined operations.

*Mr John Armstrong (Air Power International Magazine):* Good morning, and thank you for your presentation. Firstly, let me say that it is very refreshing to hear you talk about the amount of trust amongst the coalition partners, because a lot of us in this

room have been through briefings where 'NO FORN' or no foreign national segments have been included, and it's dreadful to feel like a leper on an operation like that. My question is about the devolution of command control down to the levels that you have been describing, and how has that happened. Has it been because of the information technology advances or politicians finally recognising that the military does need to have that delegation and that they really do know how to do their job? Could you comment on that, thank you?

*Brigadier General Deptula:* We could talk about that for a long time. It's not finally a realisation, it is a situation that people have to be reminded of consistently and, by the way, it's not just politicians, it's senior military leaders who also need to be reminded. The reason we find ourselves in a situation where it becomes an issue is because of advances in technology and communications. Command and control did not use to be such an issue in this sense. Back in times without telecommunications, you had an organisation where Generals would talk to the next lower echelon and that echelon would spread information in a like manner. You couldn't communicate direct with the folks who were on the front lines – today you can. There are some situations that I have been aware of where the Director in an air operations centre reached out over the electrons and grabbed the stick of the guy trying to fly the aeroplane and told him when to go to the tanker. I mean that's ludicrous because the people on scene are the ones that have the most information at the time. So, because of advances in technology and the reach back that we can have, commanders can communicate directly with personnel on the front line. Now don't take me wrong, a commander should have the ability to monitor what is going on and change and adjust the situation in conjunction with the strategic objectives that he has been tasked to accomplish, but that's different to getting down in the 'weeds'. Basically it's a principle of leadership, and you want to avoid micro-management to the maximum extent possible. But it's a situation that leadership – both political and military – continually needs to be reminded.

On your first point about the 'no foreign' issue, that is very sticky. We got around it by putting in a multinational computer network system in the headquarters, and it's something that we continually need to work on. If you are working together as a coalition and this guy's flying right next to me, why shouldn't he have the information that I have when we are going to prosecute the conflict.

# THE AUSTRALIAN THEATRE

AIR VICE-MARSHAL BOB TRELOAR

## INTRODUCTION

When Headquarters Australian Theatre (HQAST) was established in June 1997, it marked a significant milestone in the development of the Australian Defence Force and successfully separated the political strategic level from the warfighting. With the establishment of a Joint Force headquarters, functioning at the operational level of war, the ad hoc approach to the coordination and control of tactical operations was discontinued; unity of command at the operational level was attained; and a standing capability for planning the conduct of campaigns, operations and particular activities was achieved.

HQAST does not have any forces permanently assigned, leaving the raise, train and sustain issues to be managed by the three Service Chiefs. Forces are prepared by the respective Services and allocated to Commander Australian Theatre (COMAST) by the Chief of the Defence Force for a specific operation or series of operations.

This paper will discuss the origin and role of the development of the operational level of war in the Australian Defence Force, with an emphasis on the development and function of Headquarters Australian Theatre.

## THE OPERATIONAL LEVEL OF WAR

Within the historical continuum of warfighting through the ages, the operational level of war is a relatively new concept. Current theories on the conduct of war at the Operational Level can be traced to the writings of military theorists of 19th century Europe. The social and technological changes during this period significantly affected the conduct of land operations.[1] It is therefore worth a brief comment concerning the inception and development of the concept of warfighting at the operational level.

Up until the 19th century, armies were generally small and the commander's arena was the battlefield rather than the theatre of war.[2] The Napoleonic wars changed the arrangement of battle with the deployment of large and relative mobile armies. Although battles of attrition continued to be waged under his leadership, Napoleon's willingness to delegate command, to accelerate the tempo of operations, to concentrate large independent bodies of troops at critical points, all produced a relatively

1 Canadian Forces Command and Staff College, September 1994, *Aide-Memoire: Campaign Design Operational Concepts,* (unpub).

2 Macgregor, D.A., 'Future Battle: The Merging Levels of War', *US Army war College Journal*, Vol XXII, No 4, Winter 1992/93, p 34.

inexpensive victory in terms of French human and materiel resources. It also produced a new concept for the meaning of time and space.[3]

Napoleon's acute sense of timing and the depth of his operational focus guaranteed that the effects of the whole French campaign was greater than the sum of the individual parts – single engagements, actions, and battles.[4]

Of note, he never committed to writing his approach to the conduct of war and it was not until Jomini and Clausewitz analysed the historical record of Napoleon's campaigns that recognition of the three levels of wars were ultimately derived. However, the term 'operational' is a comparative latecomer, entering the literature of von Moltke during the period 1858 to 1888.[5] Although theorists attempted to define the operational level of war before World War II and commanders during the war executed campaigns at the operational level, the first significant reference in English to the phrase 'operational level of war' was not made until 1981.[6]

The operational level exists to explain the nature of command at a level where the establishment or pursuit of strategic objectives and the tactical employment of forces are linked.[7] Strategy relates to broad questions affecting the allocation and disposition of national and multinational forces in war, while tactics specifies measures to be taken when opposing forces collide on the battlefield.

It is at the operational level that military strategy is implemented through tactical engagements and battles. These sequential (and sometimes concurrent) battles and engagements link together to form a campaign. The operational level of war is therefore quite distinctive. It is concerned with the design and conduct of campaigns involving land, maritime and air forces.[8]

Within the Australian Defence Force (ADF), Campaign Planning is defined as a process, conducted at the operational level, that controls the sequencing of military operations in order to achieve strategic level objectives.[9] From this we see that campaigns are designed around strategic objectives, themselves derived from national objectives.

Although campaigns imply a broad dimension in time, space and force, the operational level of war is (perhaps) more clearly described as 'those operations conducted to achieve strategic aims by providing the means to attain tactical successes', acknowledging that forces within the theatre are joint, and possibly combined.[10]

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3 Macgregor, D.A., 'Future Battle', p 35.

4 *ibid*, p 35.

5 Epstein, R.M., *The Three Levels of War in the Napoleonic Period - Austerlitz and Friedland*, Combat Studies Institute, USACGSC, Fort Leavenworth, 1992–93, p 34.

6 Luttwak, Edward N., *Strategy: The Logic of War and Peace*, Harvard University Press, Cambridge, Massachusetts, 1987, p 260.

7 US Department of Army, *Operations*, Field Manual 100-5, 1992, pp 2–3.

8 ADFP 9, *Operations*, p 3-6.

9 *ibid.*

10 Canadian Forces Command and Staff College, September 1994, *Aide-Memoire: Campaign Design Operational Concepts*, (unpub).

# HISTORICAL PERSPECTIVE OF ADF DEVELOPMENT

For nearly a century, the armed forces of Australia have been actively engaged in the defence of Australia's vital interests. This defence has been marked by tactical proficiency and an ability to operate effectively with the forces of Australia's major allies, such as the United States, the United Kingdom and New Zealand. For many years, Australia's forces were organised principally on the basis of what they could contribute to the wider allied cause, while at the same time maintaining a 'balanced' force.

While this integration with allies has ensured the protection of Australia's interests, and resulted in a high degree of tactical expertise within the Australian forces, it has also meant that there has been little experience of planning at the operational level and of conducting campaigns to achieve national strategic objectives.[11] Moreover, there has not been a natural inclination for the single Services to think, train and operate in a joint environment.

Between the wars the competition amongst the Services was acrimonious and the Great Depression was a catalyst for intense infighting to win increasingly limited resources. Thus, in some ways, it was quite natural that the Navy and Army would resist the introduction and development of the 'Third Brother',[12] considering the resources it would consume. That stance was quite separate from the philosophical contention that Navy and Army should retain their own air forces. The outcome of that debate is now history. However, there remained significant debate and bitter contest between the Services after World War II.

In many ways the organisational structure of the Defence Force, with three Departments controlled by a separate Minister, invited competition. Importantly, each Service aimed to achieve 'balance' within its own fighting force. The RAAF has continued to establish and maintain a 'balanced air force' concept, requiring the need to provide air control, strike, airlift, reconnaissance and maritime assets within a restrictive and reducing budget regime.

It was not until the reorganisation of the Department of Defence as a consequence of the Tange Review that closer Service relationships during peacetime came a step nearer to reality. The Tange Review introduced creative tension between civilian and uniformed personnel. While as a *modus operandi* this was not a particularly helpful situation, at least the one Minister now controlled the three Services. Some 20 years after the Vietnam conflict, it was realised that with the Services slowly being drawn together in an organisational and business sense, an approach was required to warfighting that recognised Australia's global commitments and the need for an ability to act alone.

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11 Headquarters Australian Theatre, October 1998, *Decisive Manoeuvre*, 2nd Edition, p 1-1.

12 The RAAF was described as the 'Third Brother' by C.D. Coulthard-Clark, in his book of the same name – *The Third Brother*, Allen & Unwin, North Sydney, 1991.

# ESTABLISHMENT OF HEADQUARTERS AUSTRALIAN THEATRE

With a change of title from the Chief of the Defence Force Staff, the first Chief of the Defence Force (CDF) was appointed in October 1984. The CDF exercised full command of the ADF through Headquarters Australian Defence Force (HQADF). Operations Division was established to provide operational control for the CDF, although the CDF usually delegated responsibility for the execution of an operation with the appointment of one of the environmental Commanders as the Lead Joint Commander.

The arrangement was only adequate as an interim measure. The blurred boundaries of responsibilities between Operations Division and a Lead Joint Commander's organisation ensured an unhealthy level of tension. This was particularly demanding at a time when the Lead Commander was tasked with planning and mounting an operation using an ad hoc staff arrangement, and a natural single Service perspective.

In 1995 it was recognised that the current command arrangements did not achieve unity of command or effective joint arrangements at the operational level. In 1997, Headquarters Australian Theatre was established and Commander Australian Theatre was delegated command at the operational level. He was tasked by CDF to be prepared to conduct campaigns, operations and specific activities for the defence of Australia and its interests.

This arrangement ensured that a single commander was responsible for the key link between the strategic and tactical levels. In effect, this meant COMAST's function was to find and define 'Ways' to manoeuvre the tactical 'Means', in the form of tactical, joint or combined task forces to achieve the strategic 'End' required by the Government.

Importantly, this would relieve HQADF from the requirement to delve into operational detail, allowing them to maintain their focus at the strategic level and continue to engage Government departments to ensure that a 'whole-of-government approach' was maintained.

## Current Command Arrangements

With the current command arrangements, the CDF maintains full command of the ADF and he routinely works with the Service Chiefs. The Service Chiefs command their Service and are responsible for the raise, train and sustain issues within their respective Services, and the environmental Commanders report, in turn, to the Chiefs. Of note is Commander Special Forces who reports to the Land Commander for these issues.

When the CDF orders the conduct of an operation or a campaign, he will direct the Service Chiefs to assign appropriate force elements at a specified level of capability to COMAST under Theatre Command. Theatre Command is a new concept that has been

developed since the inception of Headquarters Australian Theatre, and one we tested during operations in East Timor.

For the conduct of operations, the environmental Commanders change hats and report directly to me, acting as the Component Commanders for AST. At the operational level, the ADF doctrine is centred on the component system of command. Again, I note that for operations, the Commander Special Forces now reports directly to me and not through the Land Commander. The Component Commanders thus provide me with the expert advice concerning the operational employment of assigned forces. With their assistance the campaign planning is able to maintain a broad 'theatre' focus with an emphasis on the initiation, sequencing and manoeuvring of a series of joint or combined operations.

The Component Commanders, therefore, serve two masters. However, there are no major issues regarding the tasking and reporting requirements for the environmental Commanders. There are clearly defined requirements between the Service Chiefs, in their raise, train, sustain and delegation functions; and COMAST as the operational level commander. Importantly, roles and responsibilities are clearly defined and are not ambiguous.

## THEATRE COMMAND

As mentioned earlier, the CDF assigns forces to me under Theatre Command. This concept is uniquely Australian. Both the US and the UK have command terms with similar meanings. Theatre Command was developed to fill the conceptual and doctrinal gap at the operational level. Prior to its introduction, the existing doctrine suffered a number of inadequacies. The process to assign forces to COMAST for operations was convoluted and staff intensive. It did not provide the command authority required for the operational commander to structure and restructure forces to meet the changing requirements of the campaign or smaller operational contingencies. Nor did it provide the authority to direct and prioritise logistic support to operations.

Theatre Command provides the authority to re-assign and dispatch assigned forces, and to assign tasks to subordinate commanders, as required, to achieve the military strategic end-state, in the context of an operation or campaign. Theatre Command also recognises the support function that Commander Support Australia (COMSPTAS) provides for operations, and gives COMAST the authority to direct logistics and administrative priorities to achieve the campaign objectives. Specifically, COMAST has the authority to issue directives to COMSPTAS for logistic support to the theatre to meet his operational requirements and scheme of manoeuvre.

### Joint Task Force Structures

The Component Commanders, together with their staff, are permanently allocated under Theatre Command for the planing and conduct of operations and campaigns. HQAST therefore comprises a Joint Staff, and the respective Component Commanders and their staffs. In addition to the force preparation and rotation planning conducted by

the environmental Commanders, the Component Commanders also retain responsibility for residual tasks during operations. For example:

- The Naval Component Commander (NCC) maintains responsibilities for sea control and assertion.
- The Land Component Commander (LCC) maintains responsibilities for national support area operations.
- The Air Component Commander (ACC) maintains responsibilities for control of the air, strike operations, and strategic transport (noting that strategic strike operations are likely to be directed from the strategic level).
- The Special Operations Component Commander maintains responsibilities to CDF for the conduct of special operations not associated with the ongoing campaign.

The Headquarters is also supported by a number of agencies. The Australian Joint Intelligence Centre (ASTJIC) and the 1st Joint Movement Group (1 JMOV Gp) were established by combining the respective elements of each Service. Both these organisations have proved to be very effective and were invaluable during the recent operations in East Timor. 1 JMOV Gp was a critical player in securing the required civil strategic lift assets for the deployment and redeployment of Australian forces into East Timor. ASTJIC provided the fused intelligence picture for the Theatre, with its product being distributed amongst the Component and Task Force Headquarters. It provides the interface between the operational and strategic levels, while supporting the tactical forces.

Theatre Command is exercised either through these Component Commanders or through a joint force commander. This can be either a Standing Joint Task Force (JTF) or a JTF established to command a minor operation. The Standing Joint Task Forces in the ADF are Headquarters Northern Command (HQNORCOM) and the Deployable Joint Force Headquarters (DJFHQ).

Headquarters Northern Command is a permanent joint headquarters located in Darwin and during operations it would be tasked to conduct vital asset protection, surveillance and covering operations within its AO. Of note, HQNORCOM was tasked to provide the rear area support and forward mounting base function for all coalition forces during operations in East Timor. With limited guidance, and no existing doctrine, HQNORCOM was extremely successful in conducting these operations. A significant factor in the success of the forward mounting base operations was the strong civil-military relationship developed by HQNORCOM and the local community and businesses, and the key agencies supporting the operations. I doubt that we could have conducted the task and achieved the same success anywhere else in Australia.

The DJFHQ is a standing joint headquarters tasked to command deployed operations in defence of Australia and its interests. Manned to meet the demands of the specific operation, when deployed the headquarters would consist of a joint staff and the four components. The DJFHQ is based on Headquarters 1st Division and during training and non-contingent periods is joint in name only. It remains an essential element of the

Australian Defence Force, providing a degree of flexibility to command operations. Some of the roles this headquarters can provide include:

- First, to act as a combined or joint force headquarters. This was exercised last year during Exercise CROCODILE 99, where DJFHQ commanded a combined task force of Australian and United States forces. It supported an overarching campaign commanded by Headquarters Australian Theatre, and was tasked to expel Kamarian Armed Forces from their lodgement in a near offshore island. The forces allocated to DJFHQ included: Australian amphibious maritime forces; ground forces, including an Australian Brigade; a US Marine Expeditionary Force; as well as air elements, including strike, surveillance and tactical lift forces.

- Second, to provide the headquarters and the commander for an Australian-led coalition operation. This occurred for INTERFET operations in East Timor where HQ INTERFET was based on DJFHQ. Whilst there is no extant doctrine for this option, clearly this must now be developed.

- Finally, to act as an Australian headquarters component, supporting the designated commander as the Australian National Command Element in allied or coalition activities. This is a similar role to that being conducted by the Australian Headquarters in Operation TANAGER at present in EM. Although DJFHQ is not fulfilling the role on this occasion, it is a role it could undertake.

Additionally, a minor JTF can be formed to conduct a specific operation. Operation DIRK was conducted in the vicinity of the remote Heard and Macdonald Islands in late 1997. It was an operation in which the ADF was tasked to capture illegal fishing boats that were plundering the world-listed Patagonian Toothfish. A minor JTF was established to conduct the EEZ enforcement operation that was launched from Western Australia. The joint force consisted of elements from all three Services. The operation resulted in a number of arrests for illegal fishing, and successfully reasserted Australia's sovereign rights over our territory in the Great Southern Ocean.

## ADF JOINT OPERATIONS

Successful joint operations require coordinated planning and execution up and down the chain of command. They also require coordination and planning across the operational level component headquarters. The campaigning conducted by HQAST involves the sequencing and orchestration of operations to achieve COMAST intent, and the military strategic end-state required by CDF. Critical operations in each phase of the campaign dominate command focus and receive priority in the allocation of combat forces, combat support, resources and logistic support. This orchestration permits the available combat power to be manoeuvred decisively to achieve each step on the path to victory.

In the Defeating of Attacks Against Australia scenario, COMAST would plan and conduct a campaign for the defence of Australia, or its interests, at the theatre level,

comparable to the World War II campaign for the South-West Pacific. It might go something like this:

- Increased tension has occurred within the immediate region and CDF directs increased surveillance operations and tasks COMAST to prepare plans for identified operational contingencies.

- HQNORCOM is tasked by COMAST to conduct increased surveillance operations across the NORCOM AO.

- Through the strategic planning process, Service Chiefs identify force elements that would be available for the COMAST to develop campaign plans. This process involves the environmental Commanders, who are about to change hats and conduct the operational level planning.

- The Theatre Commanders Planning Group is conducted and scopes the tasks with the four Component Commanders. The Service Chiefs have provided information on force availability and COMAST has been given strategic guidance from CDF on the mission, tasks and possible force assignments.

- HQAST produces a CONOPS for the operation or campaign, through the Theatre Planning Groups. These groups consist of joint staff and staff from each component headquarters and ensure that effective and open planning is conducted. The CONOPS presented to the CDF is supportable by each of the Services. Any key issues raised by the component staff can be directed immediately up their chain of command to the Service Chiefs for early resolution.

- The situation deteriorates and an opposing force lodges in Far North Queensland.

- On the Government's authority, CDF issues an executive order directing COMAST to conduct military operations to defeat the opposing force lodgement. In this process he assigns forces from each Service under Theatre Command.

- COMAST confirms his contingency plans and issues orders to DJFHQ as an Australian Joint Task Force. DJFHQ is augmented by the required RAN and RAAF staffs, and COMAST assigns force under Operational Command or Operational Control to the joint force commander.

- COMAST may also conduct additional operations as part of the overall campaign, and these may include:

  - ACC conducting a supporting air operation to deny the opposing force the ability to reinforce their lodgement,

  - NCC conducting a supporting maritime operation to control some of the sea lines of communication, and

  - enhanced surveillance and VAP tasks being conducted by HQNORCOM.

# OPERATIONAL EXAMPLES

## Operation SPITFIRE

You may recall that in mid-1999 the United Nations, Portugal and Indonesia committed to a popular consultation on the 'autonomy versus independence' debate for East Timor. A ballot was held in late August, and the results revealed overwhelming support for independence. We had a number of Australians deployed as part of the United Nations Assistance Mission East Timor, supporting the preparations for the ballot.

In early September, during numerous telephone conversions with the senior commander in Dili, it was quite clear that the evacuation of UN forces and consulate staff was going to be necessary. Operation SPITFIRE was conducted to achieve this, and it was to be only the second evacuation task in recent times.

A minor JTF was established comprising RAAF and Army elements, and the operation was based at RAAF Tindal. Using C-130 aircraft and a small ground security and evacuee handling force over a period of three days and 29 sorties, 2,500 people were evacuated from Dili and Baccau to Darwin. The evacuees included ADF and consulate personnel, UN workers, and a large number of East Timorese – including key figures such as Bishop Bellau.

## Operation WARDEN/STABILISE

Within days of the completion of Operation SPITFIRE, the Government committed our forces to deploy as the lead nation in a coalition force. Eventually, the coalition represented 22 countries with a headquarters in Dili. HQAST was tasked to support, in an appropriate campaign context, the planning, formation, deployment and sustainment of INTERFET, including the provision of other contingency support. This was achieved through:

- the coordination of contributing nations' offers of military forces,
- the reception of coalition forces in Australia,
- the deployment of INTERFET forces through Darwin,
- the sustainment of all coalition forces within INTERFET, and
- the development of contingency support plans.

Within the Australian context, the rapidity of the deployment of forces was unprecedented, with air and sea lift landing almost 2,000 troops in the first 24 hours. The force maintained the ability and willingness to meet force with force, whilst tempered with a desire to contain rather than escalate. The operation was very successful and has enhanced the professional reputation of the ADF internationally.

## CONCLUSIONS

This paper has outlined the concept for the Australian Theatre and will conclude by emphasising some key points.

- The establishment of the Australian Theatre and the Headquarters is a significant development in the Australian Defence Force. It has successfully separated the political strategic level from the warfighting.

- Experience from the ADF's recent operations over the past few years, and particularly from operations in East Timor, has confirmed the utility of Headquarters Australian Theatre.

- The successful conduct at the operational level of war has enabled the ADF to achieve its defence responsibilities, and for Australia to achieve its international responsibilities and contribute to regional stability.

- Additionally:

  - the ad hoc approach to the coordination and control of tactical operations has been discontinued;

  - unity of command at the operational level has been attained; and

  - a standing capability for planning the conduct of campaigns, operations and particular activities is now well and truly established.

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## *DISCUSSION*

*Mr Peter La Franchi (Journalist):* I am quite interested in the structure that you have outlined here because, as we have just seen with Operation WARDEN, there are some very interesting alterations in how the command structure should have operated – and please set me straight here if I am getting this wrong – but where in Operation WARDEN the Commander Australian Theatre or Headquarters Australian Theatre should have taken the lead role, instead I note that you talk about only supporting the Operation. In the early stages of that Operation you had the Deployable Joint Force Headquarters trying to take the lead, you had the Australian Headquarters [Headquarters Australian Theatre] trying to take the lead and you had Headquarters Australian Defence Force who, under your wiring diagrams, should have been responsible for the end-state, eventually taking direct control of the Operation. Could you explain what actually happened in those structures, how you resolved those structures in the early days, and what lessons come out of having to undertake that really rapid sorting out process that lead to CDF running the Operation.

*Air Vice-Marshal Treloar:* Thank you for that question. Firstly, if I take the points not necessarily in the order you gave them to me, you made the comment that there appeared to be a contest between the Deployable Joint Force Headquarters and my Headquarters on who was going to plan and conduct the Operation. The Operation was planned by Headquarters Australian Theatre at the operational level but, given the very rapid turnaround of forces and the short time frame between the completion of Operation SPITFIRE and then the launching of what was to be the INTERFET Force – the last of the Operation SPITFIRE sorties was completed on 14 September and the first of the ships set sail on the 18th – I elected to move my planning staff to be collocated with the Deployable Joint Force Headquarters planning staff to make sure we could do the planning and achieve that visibility across the force in the shortest possible time. That was achieved. It wasn't the ideal way to do business, but it was effective and we had the force deployed in good order.

There has been a natural expectation that HQAST would have been the lead headquarters in this Operation. The forces were assigned to me by CDF under theatre command and, in turn, both for Operation WARDEN/STABILISE and for Operation TANAGER, the current operation, those forces were then subsequently reassigned by me under operational control to the appropriate Force Commander. In the first instance, it was General Cosgrove as Commander INTERFET and in the second instance to General Della Santos under UNTAET. So we really haven't changed the philosophy in the way we are doing business. General Cosgrove was functioning at the operational level, and I don't think many people have thought about that. He was the leader of a coalition force of 22 nations, and having a direct responsibility through to the United Nations for the conduct of that Operation. Given the political sensitivities, I would say in Australia, and certainly the diplomatic sensitivities across those contributing nations, CDF took command of the Operation to make sure that those particular end-states, as you mentioned, were achieved. The fact that I still had the responsibility to make sure that the Australian forces within both of those Operations were appropriately employed wasn't changed. I, therefore, don't see any difficulty with the way the command and control of Operation WARDEN/STABILISE evolved. I think it caught more people by surprise than anything else.

*Mr Peter La Franchi (Journalist):* Just to follow on from that then, the logical next question would have to be this. In future coalition operations offshore again, who is going to take command? Is it going to devolve to CDF to deal with the political end-state, as you just said, or is it going to be Headquarters Australian Theatre?

*Air Vice-Marshal Treloar:* One of the things that caught us by surprise, and I guess that in itself is no surprise, is that we had not thought of Australia leading a coalition force. I don't think many countries around the world had thought about that as being their preserve, not just our country. So there was very much an approach to step up to the task 'cold', if you like. One of the things that we have learned from the particular operation is that we need to go back now and develop the doctrine that would support just that situation. That doctrine and the way it is developed will determine how, if we have to in the future, we conduct another operation.

*Air Marshal Ray Funnell (RAAF Ret'd):* It seems within this arrangement that you have described for us, as you move from normal state in the ADF to one in which your Headquarters is activated for the purposes of achieving some strategic objective, that it

is very demanding of high quality officers to conduct the staff tasks involved in all this. You are going to be taking people, as you have done recently, out of their normal jobs and bringing them in, and they have got to be up and running almost immediately. Consequently, it would seem that a really important task for us is the education and training of our people to be able to plan, to mount, to execute operations at the operational level of war. How are we doing this, and are you satisfied that we are doing it well?

*Air Vice-Marshal Treloar:* We are doing it, I believe, through changing part of the various syllabi, or will in due course, for some of the courses conducted within the ADF. Certainly within the ADFWC, there is now a stronger focus on the requirements of staff officers within HQAST. Sir, I take from your comments the inference, perhaps, that the staff officers are dragged out 'cold' into the new operational environment. In fact, they would spend probably a 'guesstimate' of about 20 per cent of their time at HQAST doing the various planning for a series of operations, most of which are not undertaken, but for which planning needs to be conducted in the normal course of our activities. So, they are not unfamiliar with the planning processes and how we need to operate as a joint and component staff together. The Component Commanders would meet on a normal basis, without a formal operation being conducted like INTERFET last year, about once every three weeks. We would go through the various estimates that would need to be done and conducted on a routine basis, and that would flow down through our staffs, who would be involved as well through either operations, intelligence or the planning staffs. So, it is not a shock to them when they get together to start the planning of a particular operation. More training does need to be done in the joint environment, and in some ways it can best be done as we gain more experience ourselves in a learning process and develop those courses. I am very comfortable with the quality of the people that were provided for the Headquarters, to answer the last part of your question. Unfortunately, we had to take people from the Staff Colleges last year to supplement the manning for HQAST and the components. They in themselves learned a lot about the way the operations were planned and conducted, but we do need to do better with our training for our staffs.

*Group Captain Allan Crowe (Aerospace Centre):* Sir, it has been mentioned a couple of times yesterday and today, the importance of trust in any operation, and it seems to me that we have a potential problem with our Deployable Joint Force Headquarters, which is largely an Army unit in peacetime and supplemented by Air Force and Navy for operations. Quite naturally – and I think there is an unfair criticism of Army – Army tends to get on and do the job, and then the other people arrive and have to develop the trust. I think there is also a potential problem for Headquarters Australian Theatre, with your Component Commanders separated from you, other than during operations. Could you perhaps comment firstly on the importance of manning your Deployable Joint Force Headquarters with for the three Services in peacetime to develop that trust, and the importance of bringing together your Component Commanders into HQAST.

*Air Vice-Marshal Treloar:* Firstly, without trust you don't have an effective planning team or teams, and therefore you don't have an effective operation, so it is extremely important that we establish that very early. It is a dilemma with the manning of the Deployable Joint Force Headquarters – it is Headquarters 1st Division in its normal

guise. It does plan and is assigned to me for the planning of certain operations and conducting of exercises, but it is a balance between finding those very scarce skilled staff officers to man the Headquarters versus the level of activity that Headquarters would normally conduct, or be conducting planning for operations. And as soon as you would like to put more manpower into that particular Headquarters, you get a natural cry from Service Chiefs about how they can't man their own particular areas of the Services, and I acknowledge that. So the way around that is to make sure that we have CPXs and exercises conducted on a routine basis that lets the people who would man those Headquarters, with the components that come in from out of town, get to know the people who they are going to work with in the parent Headquarters. It is not ideal, but it is the way we have cut our cloth with the size of our Force. The second point about Component Commanders and being collocated, the Headquarters is an accident of geography at the moment. It is handy that we have Headquarters Special Forces and the Naval Component Commander close by, and just across in Victoria Barracks about five kilometres away we have the Land Component Commander, but the Air Component Commander is some 60 kilometres away – about a two hour drive. That's hard on him and it is even harder on his staff to get backwards and forwards. The way we develop the trust at the moment is through daily VTC linking, to brief on the intelligence scene and the operations that are being conducted at the time – that flows down through the staffs. But it doesn't take away the need to have face-to-face contact, or face time, and the sooner we can collocate the Headquarters, the more effective we will be and the more efficient we will be, and the levels of trust which already exist will be reinforced.

*Air Commodore Jim Cole (RAAF):* Sir, leaving aside the collocation of HQAST, which I think everybody agrees would be great, probably since the Tange Report the operational level has been in a continual state of development. How close are we to a final state, if that ever happens, and if we're not, where do we actually have to go to, or where do you see the end-state?

*Air Vice-Marshal Treloar:* I think the first step is that we need to have a collocated Headquarters and collocated staffs. It has been a gradually process. There has been a plan since about 1988 of how to develop the operational level headquarters within the ADF, and we have seen that develop through Headquarters Northern Command – its roles initially were not well defined, in fact were quite misunderstood and have been changed subsequently. But where we need to go right now is to have staffs that can work routinely side by side to be able to plan for the various contingencies. If we can do that, backed up with a good communications system, which we are slowly developing, then it will be fine. We are not there yet and won't be for several years, until we get the building. The building itself isn't particularly important, but it's putting the staffs side by side and seeing how the new communication flows develop. When we have done that, then we'll start to be able to look at whether we have achieved the right level of effectiveness and start to look at, hopefully, reducing some of the staff in those Headquarters.

*Air Commodore Bruce Ferguson (RNZAF):* You mentioned that you do not have forces permanently assigned to you. We are going through a restructure at the moment and that's one of the conundrums that we are actually dealing with, whether in fact we

do permanently assign forces for operational command or not. Would you care to comment on that please?

*Air Vice-Marshal Treloar:* Firstly, I would bring to your attention the comment that the single Services need to be good at their own jobs, and it was mentioned by speakers yesterday. That can only be done by single Service training and the development of single Service doctrine, and I would not want to take away from that. I would be concerned if I had those operational forces permanently assigned to me and there would be, over a period of time, a tendency to overly concentrate on training in the joint environment at the expense of the single Service environment. I think that all the support requirements that go with maintaining a single Service operational force, to me, sit quite squarely and fairly with the Service Chiefs. When a force is assigned to me for a particular operation I have to develop a concept of operations and provide it to CDF. He has to agree or otherwise change it. In that process the Service Chiefs sit with him and they make comment on how their force elements are going to be used, and they actually act as a sort of a safety valve, if you like. If you permanently assign those forces to me, in my mind perhaps, you start to undermine some of those processes, and I personally would prefer to stay the way I am if I had to have a choice between the two. Forces that are assigned to me have a certain level of capability and then the size is determined on the concept of operation – I think that is a nice clean way to do business. It doesn't challenge the Services or the Service Chiefs, and lets them see squarely where I sit as an operational commander for specific operations and tasks.

*Wing Commander Anker Broderson (RAAF).* Would you please describe the working relationship between the Strategic Command staff and the HQAST staff during Operations SPITFIRE and STABILISE, and are their any lessons for the delineation between the operational and strategic levels of command control from it?

*Air Vice-Marshal Treloar:* The Strategic Command was responsible to CDF for staff advice to CDF on how an operation should be conducted, and in a theoretical basis the line is directly between myself and CDF. For many practical issues of resolving or developing particular points for a plan you need to do it through a staff process, so I need to be able to talk with Head of Strategic Command as a staff process when we go through a particular planning development, before I present that plan to the CDF. Communication was one aspect that is always difficult. It wasn't difficult at the Head level but as you went further down through the process to the various staffs, the stories sometimes became misunderstood and that obviously caused tensions, but it was an effective process. It was one that was developed, again, on the run because we had not done this sort of operation before. They [Strategic Command] quite clearly were, in the majority of cases, looking at the strategic level and outward, certainly in the early stages in supporting VCDF for the development of the coalition, while at my level I was looking at bringing the liaison officers on board, finding out what the capabilities of the particular contingents would be and how we would move them into theatre. As I mentioned in my speech, there is always an element of tension at those levels. That's rightly so, but I think it is very much at a comfortable level and one that is well within the ambit of the various people involved.

*Dr Alan Stephens (Aerospace Centre):* I can't see any logical operational reason for the Component Commanders to have two sets of names – I can't see why an Air

Component Commander couldn't have those residual responsibilities you referred to. Is that simply a construct to protect single Service sensibilities?

*Air Vice-Marshal Treloar:* Well I think it's a construct that allows us to identify when the environmental Commanders are operating in particular roles and to whom they are responsible. It actually defines a line of responsibility with the name of the hat that they are wearing at the time, more than anything. If they are doing a raise, train and sustain issue they are directly talking to the Service Chiefs and that's where the control and direction comes from. If they put on the Component Commander's hat then they are assigned to me to develop that particular operation and the planning for that operation. It is one of providing clear delineation and I don't think they have any problem with that particular nomenclature.

# KNOWLEDGE IN THE AUSTRALIAN THEATRE AIR POWER: OUR PEOPLE, THEIR KNOWLEDGE

AIR COMMODORE JOHN BLACKBURN

## INTRODUCTION

I will start my discussion with a statement: Our people are the Air Force. The platforms, weapons and support systems are the tools they use to achieve the commander's operational goals. Specifically it is the knowledge that our people have developed throughout their service that is the critical factor in our ability to employ air power effectively and to win the battles they may fight. It may be blindingly obvious, but sadly not well appreciated.

So, why discuss this topic? Our preliminary analysis of our future capability requirements under the Air Force 2015 Strategy development process suggests that our future security environment will be more complex and ambiguous. Changing vulnerabilities, the potential involvement of non-state actors, the possibility of asymmetric threats and the potential offered by the RMA leads us to conclude that our role in the pursuit of national security will change. In such an environment the requirements on our people will be more demanding. If current trends continue they will have to do so with a smaller military supported by a complex web of commercial and government agencies. The knowledge, skills and qualities we will require of our people are not likely be the same as of those of today. If we determine the need to change and improve ourselves, then we must take action now and not just pontificate on future challenges.

I recollect that 'knowledge' related issues were discussed at the last Air Power Conference in 1998. I do not intend to repeat those discussions in any detail as they are contained in the published record of proceedings of that conference. I want to reflect on some of the issues that emerged:

- Knowledge warfare and operational concepts, such as decision superiority, were linked to technological advances and the information revolution. The ability of the Air Force's hierarchical structure to exploit or respond to technologies that rely on networking was identified as perhaps a bigger challenge than that of absorbing the technology.

- The question was raised whether the knowledge revolution had fundamentally impacted organisational behaviour, attitudes, values and work practices. Whilst it was recognised that the nature of military business itself precluded a move away from the hierarchical norm, the challenge for the Air Force was to develop a form of networking hierarchy which would allow us to exploit the advantages offered by information technologies and the broader RMA.

- The presentations raised the following questions for me: will our training and capability development system allow us to evolve into this knowledge force of the future or do we have to take a different approach? The difficulty seems to be what we do about these issues, the theories, and the concerns we have regarding the ability of our people to adapt and to take advantage of current and anticipated changes.

- Some people suggest we should roll with the changes and let the system adapt as we face new environments and opportunities. I take a counter view. Whilst I am not naive enough to believe we can predict the future, I do believe that we can influence it. It is our responsibility to do so to maximise the effectiveness of both current and future generations of warfighters. The knowledge foundations of our future leaders are being built today in our education and training institutions, and in their experience. Therefore, the time to act is now.

My aim here today is to ask you to think about how your knowledge has been developed, how you share it and pass it on to your team-mates and successors, and whether or not you are utilising your knowledge to best effect. I will talk about some initiatives that we are taking to improve ourselves in the knowledge arena as a part of a broader program of Air Force development. I will seek your future involvement in these development activities to help make us, the Air Force, more effective and therefore enhance our contribution to the ADF's joint capability.

So, to the scope of my presentation. I will focus on the challenges we face as we grow knowledge within our people in order to train, sustain, maintain and develop air power capabilities. To do this I will address the following:

- Place some boundaries on the discussion by defining what I refer to as 'knowledge'.

- Discuss some examples of where we have not employed the knowledge in our people to best effect and how we have not addressed the issue of maximising capability through the sharing of knowledge. This should lead to some conclusions regarding how well we have prepared ourselves for today's challenges.

- Highlight the near term challenge we face with our decreasing workforce numbers and our recruiting and retention problems (ie where our knowledge resides).

- Discuss the impediments to addressing these challenges, in particular the culture within our Air Force. What do we need to change to be able to transform ourselves? This presentation will have a disconnect at this point as I switch to looking at the problem from a whole-of-Air Force perspective.

- Discuss how we are defining our future force requirements. What should we prepare for? Is it feasible to 'plan' in the conventional sense; should we just go with the flow or can we view strategic planning in a different way?

- And finally, outline how we plan to address these challenges within a broader Air Force transformation plan we are developing; discussing a broad range of initiatives that should start to address the problems identified in relation to knowledge. Most important is the need to recognise that the knowledge challenge should not be addressed as an isolated issue but as a thread within a broader transformation of the Air Force.

I do not claim to have all the answers; no-one does. What I want to emphasise is that:

- we recognise some of the problems,
- we are developing a focus for the Air Force that aims to support innovation and development within boundaries with which our current culture can cope, and importantly
- we are taking action but will need your help to build a more effective air power capability.

No doubt we will make some mistakes, but more importantly we think we will learn along the way. If we can effectively mobilise the intelligence and knowledge of many of our people, the outcome will be better than originally conceived.

## WHAT DO I MEAN BY KNOWLEDGE?

Firstly, it is important to place some boundaries around this discussion by defining the context in which I will use the term 'knowledge'. Over the past decade we have witnessed an increased focus on knowledge and knowledge management in the commercial sector. Some knowledge management texts refer to knowledge as information in context and in action. Others refer to the hierarchical construct of data, information, knowledge and wisdom, as they seek to create systems and processes that will package corporate knowledge for distribution in order to provide the commercial advantage or edge. The approach which has some appeal to me is outlined in a book by Thomas Stewart entitled *Intellectual Capital*.[1] He concluded that a technically focused solution to turn 'corporate smarts' into a knowledge management process and system is not achievable ... knowledge cannot be slotted into a data-to-wisdom hierarchy for the simple reason that one man's knowledge is another man's data. He noted that 'knowledge assets, like money or equipment, exist and are worth cultivating only in the context of strategy ... you cannot define and manage intellectual assets unless you know what you are trying to do with them'.[2] This point is the key for some conclusions I will draw at the end of my presentation.

I do not intend exploring the theories of knowledge or knowledge management but rather, having highlighted the variation in approaches to knowledge, I will focus on the relevance of our people's knowledge to air power. In that context I will refer to our people's knowledge as the **understanding** derived from the combination of

1 Stewart, Thomas A., *Intellectual Capital, the New Wealth of Organisations*, Nicholas Brealey Publishing Ltd, London, 1999.

2 *ibid*, p 70.

**information and experience** in a **context** which enables them to employ air power effectively.

## HOW WELL HAVE WE PREPARED OURSELVES FOR TODAY?

Whilst overall I think we can be rightly proud of the capabilities and achievements of our small and still shrinking Air Force, I must conclude that we could have done better in some areas. With the benefit of hindsight many of us missed a fundamental point in our efforts to deliver air power capabilities. We developed, acquired, and employed air power with a platform or equipment focus. We are very comfortable at managing technology and aircraft; however, without a clear understanding of how all elements of capability will function – in particular how our people will operate the platforms or equipment, how they will apply their knowledge and skills to achieve a desired operational outcome – we will fail in our goal to deliver effective capability.

Our consideration of the people aspects of capability has been rudimentary in some areas. To some involved in capability management, present and past, the management of our people is something best left to the personnel staff. We often make the statement that people are our most important asset; however, I think there has been more rhetoric than action. In his Air Power Studies Centre[3] (APSC) Fellowship book, *The Power of Many – The Human Factor and Air Power*, Gary Williams provides an interesting perspective of the Air Force as a classical bureaucracy, a technological organisation run by technicians and using leading edge technology. We tend to manage it as we would a piece of machinery – 'for the group instead of the individual, for sameness rather than diversity, for predicability rather than variability ... While the system is in many respects efficient, it is inherently inflexible and unsuited to a changing environment.'[4] We should reflect on his view when we discuss our future requirements later in this presentation.

If we continue to do business the way we have in the past can we meet the challenges highlighted at the last Air Power Conference? I suggest not. In my view, the retention of the right knowledge and the ability for subsequent generations of warfighters to build on that knowledge is the key to being an effective air force and to the delivery of air power in the joint context.

So how are we doing? Firstly, I will examine the positive side – what we do generally well. At the tactical and operational levels we invest significant effort in documenting our existing standard operating procedures, tactical procedures, lessons learned and our doctrine. This process has provided significant benefits over time allowing each new generation to build on the experience of others, thereby improving our operational capabilities. Knowledge management theorists would express this process as the recording of explicit knowledge. Our instructional techniques rely on demonstration, mentoring and explanation to transfer the knowledge of operations from one generation to the next – the transfer of tacit knowledge, that is that which cannot be readily

3 The Air Power Studies Centre is now the Aerospace Centre.

4 Williams, Gary, *The Power of Many – The Human Factor and Air Power*, Air Power Studies Centre, Canberra, 1996, p 132.

documented. However, I do believe we find it easier to record information and experience, rather than documenting the context and understanding related to knowledge which could allow us pre-adapt to future changes.

When we step outside of the tactical and operational arena I think our ability to transfer and retain knowledge falters somewhat at the strategic level and at the macro-level with respect to building air power capability. Since returning to the strategic level some 14 months ago, I have found repeatedly that many of our 'new initiatives' are in fact re-inventing the wheel. We lack corporate memory or knowledge about much that has occurred, even in recent years. Much of our effort does not capture or employ the knowledge resident in our people and that we often duplicate functions and tasks because of poor communication and a lack of knowledge sharing.

Contributing to these problems are changes, such as the cuts to the Service Headquarters to a nominal 100 people each, which occurred few years ago. I am not advocating a return to the heady days of large Headquarters – far from it. But that change was not the result of a logical analysis and the result of improved processes and knowledge sharing. Some years later we repeatedly find that important functions and knowledge were lost as a result of that mandated change and that these shortfalls are now emerging as serious impediments to the effective functioning of the Air Force. I am advocating that we improve our understanding of our people and their knowledge, and that we develop a way of improving the retention and sharing of that knowledge across the Air Force and the ADF.

Having discussed some general problems I will now focus on a specific example regarding capability and knowledge. We have acquired platforms or capabilities without adequate regard for how we would generate and retain the knowledge necessary to employ them to best effect. The example I will use is the Surveillance and Control Group, currently responsible for air surveillance, air traffic control and air defence control; a group with responsibilities in the areas identified for the ADF's high priority 'Knowledge Edge'. Over a period of some five years we plan to take this Group and double the number of operators, introduce AEW&C and the JORN into service, and replace all of the systems in both ATC and Air Defence Control environments with significant improvements in technological capability. The development proposals for this Group were equipment focused, with little understanding of how the integrated system would operate and, therefore, what our people would need to know to be effective operators. For example, the acquisition of AEW&C will increase the number of air defence controllers in the Air Force from 46 to in excess of 100. Our original plans included the requirement to grow our workforce numbers but did not acknowledge the problems of doing so with existing systems and training capacity. Nor did they consider how we would develop and maintain the skills and knowledge base of the increased number of controllers in the future with no concomitant increase in operational exercises or training capacity. We are faced with the possibility of being equipped but not capable unless we make significant changes to the way we train and retain our people and their knowledge. Surveillance and Control Group are taking steps to address the issues within their area of responsibility.

In some cases we have been equipment purchasers rather than developers of effective air power capability. Whilst our approach to force development has matured significantly in recent years, the approach to Air 6000 being a good example of this, we

still have some way to go when considering the people side of the capability equation. So, why is this the case? Perhaps it is because we work largely within platform or Force Element Group (FEG) stovepipes at the tactical level, where we do perform well, and have not had the time, motivation or perceived need to document or share the knowledge, and thus understanding, across the organisation.

We seem to have assumed in many instances that the knowledge our people possess can be recreated in each new generation, and that with the Air Force at large we have sufficient 'corporate knowledge' to do the job. People resign or retire and we still **think** that we achieve the task. We focus on the weapons system or platform element of capability, sometimes taking the attitude that we will acquire the technology and our people will figure out how to employ it to best effect after delivery. With the changes I will outline shortly, such an approach may be counterproductive in the future.

## THE NEAR TERM WORKFORCE CHALLENGE

Given the emphasis I have placed on the individual and collective knowledge of our people, it is worthwhile to reflect on some of the near term challenges facing our workforce. The RAAF continues to reduce the numbers of people in service; from a workforce of some 23,000 in the late 1980s we are reducing to the current goal of 13,500. At the end of the current reform program we will have seen a reduction of some 36 per cent of the total force over the past decade, with a planned 12 per cent reduction in our officer force over the same period.

Functions removed from uniform roles in the Air Force are being contracted out, represented by the grey area in Figure 1:

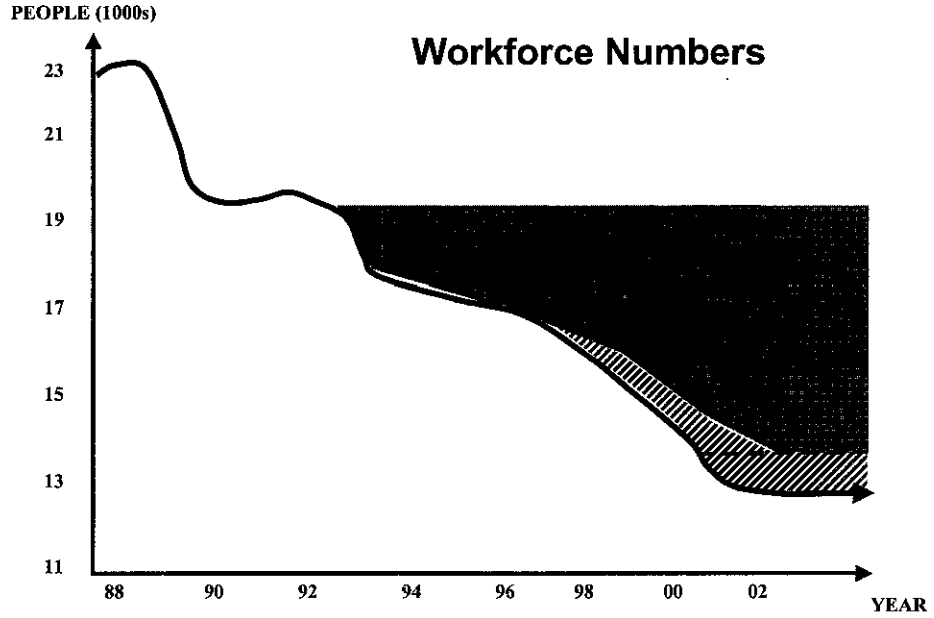


**Figure 1 - RAAF Workforce Numbers**

Consequently we will be much more reliant on industry and our contractor support base to provide the skills, and more significantly the knowledge, previously embedded in our own people. Harnessing that knowledge, particularly in a more mobile contractor workforce will likely prove a greater challenge than harnessing that within the Service – a task in which we are already deficient. Another issue we will have to face is whether, with a much reduced support arm, we will still have the necessary skills and knowledge to manage the support systems and associated contracts. For example, in some areas, our officer and airman engineering categories may not be sustainable following the commercialisation program.

Our separation rates are, on average, at their highest rate for the past decade – from a historical separation rate of eight per cent per annum we are now experiencing 12 per cent. High separations may outpace the planned reduction in establishments, further compounding our workforce shortfall. The disturbing pattern of separations is that they are primarily junior people. This is resulting in a rapidly ageing airman force, and gives us concern for the depth and quality of the promotion pool in the future. Our recruiting goals are not being met, although we may take some limited comfort that our rates are the highest of the three Services, at 90 per cent.

Budgetary pressures could result in further reductions in force numbers. Capped defence expenditures, combined with rising people costs (in the order of four per cent per annum real cost increases) and rising equipment and operational costs, will require either personnel cuts or capability cuts without substantial funding increases. Unfortunately, the fastest way to reduce costs is to cut people. If this is done rapidly to accrue savings in the shortest possible time, we will lose that knowledge we have spent considerable time and resources building. We must acknowledge this possibility in our future force planning and develop mitigation strategies to minimise the impact of lost skills and knowledge. Demographic analysis predicts that we will be competing with civilian industry for a smaller educated pool of people and that we may not be able to sustain our workforce requirements with a closed workforce structure given societal employment trends (eg job mobility, part time careers).

The bottom line is that the knowledge pool as represented by our people is shrinking. This will adversely impact on our ability to deliver effective air power capability in the absence of hedging measures. We must ensure that the remaining people are allowed to employ their knowledge to best effect, and that we build our knowledge concepts on the future workforce demographic and not the past.

Before considering how we will identify what our future needs are, I want to consider some of the impediments to change that exist within the Air Force today.

## IMPEDIMENTS TO CHANGE

So what do we need to support change? What could impede us? As I discussed previously, you cannot define and manage intellectual assets unless you know what you are trying to do with them. We need a focus or vision of what we are trying to build. I am not talking about a plan that specifies detailed steps over the next decade – such a plan would have little utility as we will not be able to define a precise end-state. There

will never be an end-state just a broad direction and some boundaries and thus the detail of the plan must evolve continuously.

We will need a compelling reason or 'trigger' to transform, as such change may not be welcome by a population overtasked and focused on the problems of today. This compelling reason must be built into the focus or vision for the change. Merely identifying the problems of today will not provide that reason in my view, for we are already operating at a perceived acceptable level today without such change.

A 1998 Rand Paper *Transforming the Force*[5] provided a useful list of historical triggers for change as shown in Figure 2:


**Figure 2 - Historical Triggers for Change**

If we view this list from the Air Force perspective, we can see a few potential triggers for our change:

- Our budgetary situation is serious – this will force some degree of reactive change.
- Whilst we have fortunately not had a recent debacle, we are faced with regional security concerns.
- We have not, as yet, clearly enunciated a visionary need for change.
- We do not have the operational or budgetary slack to allow us to experiment and demonstrate the value of change to any significant extent.

5 Davis, P.K., Gompert, D.C., Hillestad, R.J. and Johnson, S., *Transforming the Force*, Rand National Defense Research Institute, http://www.rand.org/publications/IP/IP179/.

- The final trigger is where I believe we also have good potential; as the Rand report expresses it, to promote the ideal of forward-looking people, technologically ambitious recruits and belief in a learning organisational culture. **We have the good quality people – we must allow them to participate and innovate.**

Whilst recognising the range of triggers, I would suggest that the primary reason for change must be based on a future warfighting need or threat that highlights that the status quo will not meet the challenge. This will need to be addressed in our strategic planning process.

A second Rand report, *Transforming US Forces: Lessons from the Wider Revolution*[6] noted that by freeing, utilising and rewarding brain power, networking mobilises the intelligence of many at the expense of control by the few. The report concluded that we may require a new type of leadership in some areas. Noting that accepting the need to 'foster an organisation's ability to learn and translate that learning in to action ... paradoxically [requires] the leader ... to drive the organisation to reduce its obedience to him or her in favour of ... the organisation's needs'.[7] Our existing structures, processes and culture may impede such action.

What I am focusing on here can be coalesced into the need for a re-examination of our culture and an understanding of the work environment and process changes necessary to facilitate such change.

Finally, tools: if knowledge is to be shared and developed effectively we will need to take advantage of some of the tools now available to us as a result of technological advances. In the field of knowledge management, tools are often applied as the primary solution. However, the use of tools without addressing the broader impediments to change will lead to distraction and, in all likelihood, stagnation.

## AIR FORCE TRANSFORMATION FRAMEWORK

Having highlighted some of our existing problems or challenges, I will now discuss how we propose to deal with them. I have grouped the focal areas that I think need to be addressed in order to improve our ability to develop and share knowledge. However, as I noted earlier, any knowledge initiatives we have must be a thread within a broader Air Force change program, not an isolated change initiative. So, rather than focus on these areas purely from the knowledge perspective, I will address the issue at the macro level – that is change we are trying to effect across the Air Force. In doing so I will take this opportunity to discuss a few of the Air Force change activities that are under way.

I will address our plans in terms of a framework that we are developing for transforming the Air Force and will discuss the linkages back to the knowledge challenges where pertinent. The framework should provide situational awareness of

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6 Gompert, D.C. and Lachow, I., *Transforming US Forces: Lessons from the Wider Revolution*, Rand National Defense Research Institute, http://www.rand.org/publlications/IP/IP193/.

7 *loc cit.*

Air Force change initiatives and their relationship to each other. For example, we need to situate the change activities we are pursuing and their interrelationships. We need to understand how these activities will need to change over time. There is nothing worse than pursuing a change program that has long become irrelevant – I am sure that most of us have experienced this. Obviously, the further we go down the time line the less prescriptive we will be. I will address the three focal areas of the framework; there are other areas under consideration. The activities I will describe under the first area, the focus / intent group, have been discussed at the CAF Strategic and Corporate Planning Conferences over the past six months. However there has been little visibility of this across the wider Air Force to date.

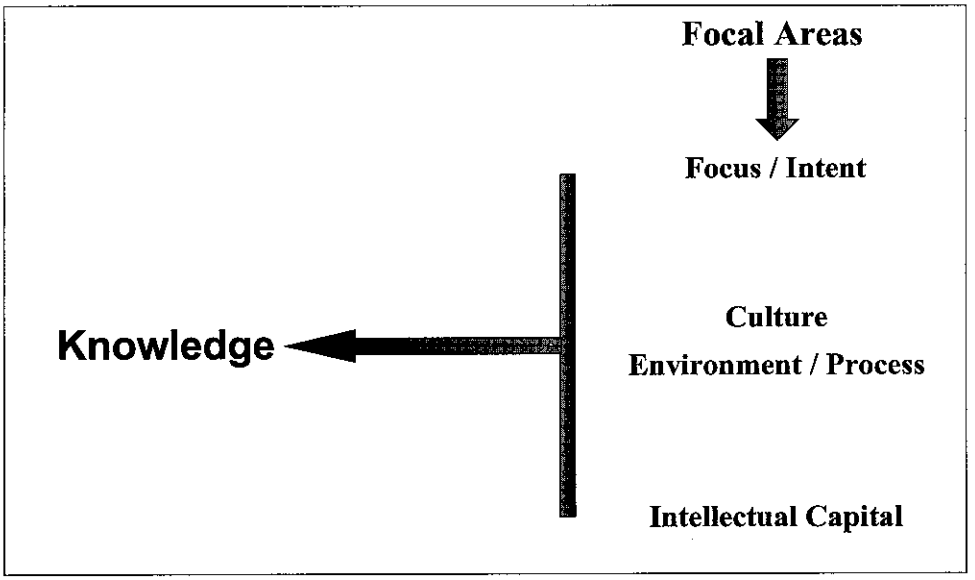


**Figure 3 - Focal Areas of Transformation Framework**

**Focus / Intent**

At this time, the Air Force does not have a mature, published Strategic Plan. We therefore lack a shared focus or long-term vision of what we are building. This is a serious deficiency – but not a new one. For the past 12 months we have been building the strategic planning framework, leveraging off the foundations provided by our alternate futures studies initiated some three years ago. The strategic plan will be driven top down by Government policies, the impending White Paper and by whole-of-Defence strategic plans. A whole-of-Defence plan is yet to be published – this complicates our efforts somewhat. Our planning framework is attempting to distil our strategic intent for the post 2015 period. The elements comprising the strategic planning framework are shown at Figure 4.

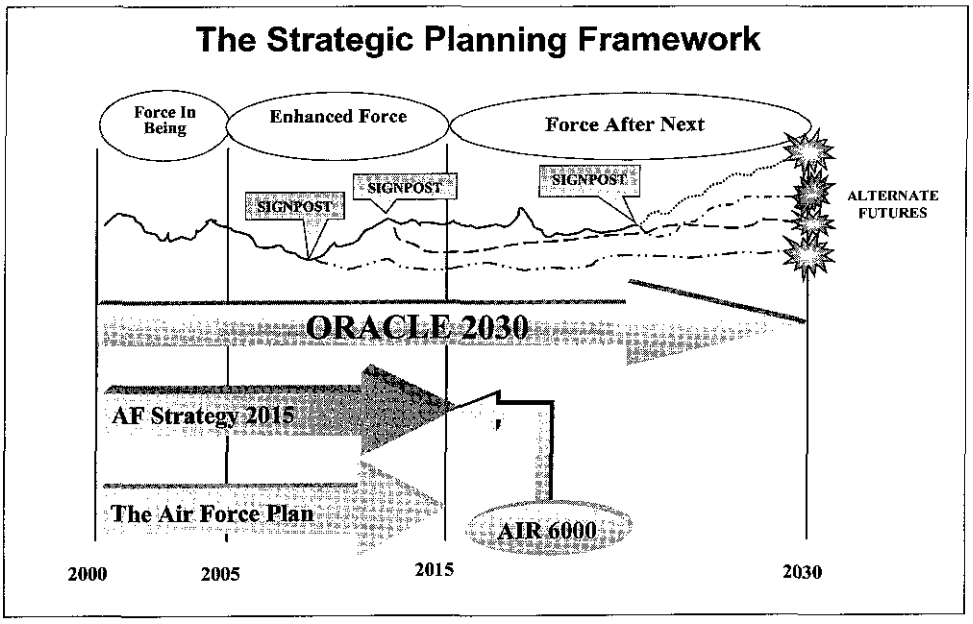


**Figure 4 - The Strategic Planning Framework**

Now a sceptic may say that the track record of those purporting to predict the future has not been good. I would have to agree; however, we counter that with this thought – the journey to the future is more important than the predicted destination, for we will have to fight and win whilst we are on that journey and not when we reach the end of the rainbow. We will never reach that end as it will always be ahead of us.

So what are we trying to do? The aim is not to predict the future but to create a shared organisational focus for our people. Over the next 12 months we will continue to populate the strategy and plan. We will postulate what alternate regional and global security environments we could face over the next 20 to 30 years.

What outcomes could the Government seek from us in the 2015–2020 timeframe? Our initial thoughts regarding the likely spectrum of conflict and operations in which a future Aerospace Force might be called upon to engage includes:

- High technology, long-distance, coalition operations.
- Regional peace support.
- Humanitarian relief.
- Offensive operations against a non-state threat.
- Protection of Australia, including against non-military or non-state based threats.

In summary we envisage a **broader** range of threats and roles and a greater level of interaction or teaming with non-military agencies to achieve whole-of-nation security goals. We do not see the end of conflict between states such that we focus purely on

lower levels of conflict and peacekeeping, within the timeframe for which we must plan. More on that issue when we publish our plan.

We need to identify what capabilities we will need to maximise our warfighting ability; Project Air 6000 will identify a part of this picture. However, we think our conceptual approach to capability will need to change as illustrated in Figure 5.

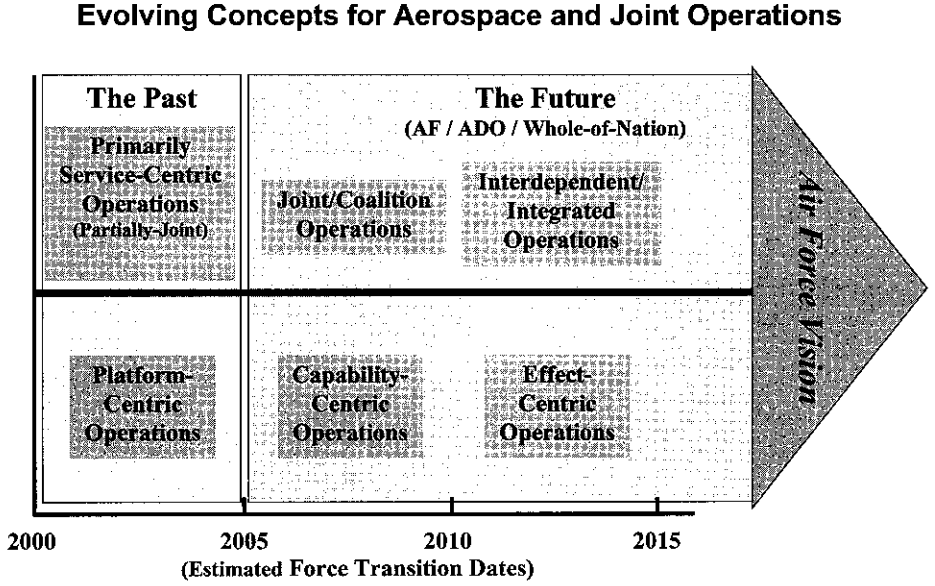


**Figure 5 - Evolving Concepts for Aerospace and Joint Operations**

Jointery and interoperability (both equipment and doctrinal) will be key tenets for the Aerospace Force and will involve the close integration of all three Services and other Government agencies. Coalition interoperability, with a range of partners having varying levels of technical development and organisational competence, will also be a capability determinant.

The central question we are trying to answer is what types of people we will need both in and out of uniform to perform our roles, and what skills and knowledge they will need to be effective warfighters. There is obviously no simple formula to define the right person. We will need a range of skill and personality types to understand and operate with the broadening range of strategic demands. We will need substantial intellectual/knowledge capabilities, for whilst technology will improve situational awareness and provide better decision-making tools, we conclude that the key discriminators with respect to warfighting outcomes will continue to be the best people. Proliferation of modern technologies may reduce the advantage we have historically gained from our privileged access to high technology through our alliances. We will need to experiment thorough wargaming and simulation to build a better understanding of what we will need. However, diversity in skills, knowledge and cultures with a strong intellectual capacity are the issues we think will be critical in the future environment. Tolerance of diversity will be a key challenge.

I re-emphasise that our aim is not to develop a prescriptive detailed plan for the next decade but rather a strategic intent, an understanding of future challenges and boundaries within which our people can exercise their initiative and develop air power capability to improve our warfighting capability. This type of approach however, will be difficult for some convergent thinkers to accept and employ.

Our goals for this planning framework are ambitious – but without them we will remain a reactive organisation driven by a three to five year budget focus and not by any derived understanding of who and what we need to be. In order to achieve our goals we cannot afford to re-invent the wheel – we are unashamedly leveraging off the excellent work done by our allies in their strategic plans.

Returning to my focus on knowledge issues – the planning framework will answer some key questions that I identified previously. That is, what we want to do with our knowledge assets, what are the triggers that will drive change (ie the operational need), and what are the knowledge qualities that we will need in our people in the future.

The strategic planning framework will take a number of years to mature. Broader Air Force and ADF participation in developing the framework will be sought in the latter half of this year and some of you will have the opportunity to participate in the associated workshops. More detail will be made available across the Air Force following the CAF Strategic Planning Conference at the end of this year.

**Culture / Environment and Process**

Now to an even more esoteric area – culture/environment and process. If the first focal area is where we are going, this area is how we execute the plan and do the job today. CAF has initiated a program to examine our Air Force culture and to determine how we can shape it to improve our warfighting capability. We need to create the environment and conditions that will allow us to adapt to and exploit the challenges we will face and to be more effective members of the joint, ADF team.

We are not trying to create a homogenous culture, but rather to build on our unique and common strengths, and have a culture that is diverse yet complementary. Some of the key issues we will address include the destructive elements of tribalism within our Service and our cultural dependence on hierarchical structures which can inhibit innovation and action.

The culture program is a bit like trying to mould custard – some people may wonder why you would bother; and if you do, you soon find it is rather hard to come to grips with. So why bother? Firstly, we want to win at whatever we do – this takes the best team possible. The problems I discussed with respect to how we foster and grow knowledge in our people suggest that we have some embedded cultural blockages within our organisation and systems. There is no point in having a strategic plan unless you have the culture focused on improving the organisation.

Secondly, the multitude of surveys and the analyses we have conducted in recent years have identified some cultural dilemmas resulting from the multitude of reform programs we have experienced, the changing nature and expectations of our people,

and the lack of a shared understanding of what we are building. In addition some of the expectations of our junior people are different to those of the senior leadership. Whilst we do not plan to merely accede to societal fashions – we must adapt ourselves to the reality of societal change.

Finally, the ability for the Air Force to adapt its current structure and processes to the demands of, perhaps, the RMA or to realise the potential gains of networking in the modern technological environment will be dependent on cultural flexibility. I suggest we have some way to go before we could be to be described as culturally flexible.

Past programs, such as total quality management, brought us significant benefits but, to my recollection, pervaded the lower levels of our Air Force rather than the top. In contrast the culture program is starting with the leadership of our Air Force under the personal sponsorship of the Chief. We seek to change ourselves in the senior leadership before we ask others to change. We plan to migrate the culture program down the rank structure next year. The culture program is trying to address issues far broader than just knowledge. We cannot risk all the positive aspects of our culture which allow us to be as effective as we are today. However, the program it is linked to the knowledge issues I discussed previously, as cultural change will be the key to:

- improving/changing our leadership style where necessary,
- incorporating networking processes to create a hybrid hierarchy/networked organisation where valuable,
- recognising our people's value for their knowledge and not just for their category or rank, and
- focusing on people as the core of our warfighting capability.

**Process/Environment**

A current initiative related to process is the Air Force Capability and Group Management Concept. We found that we were managing capability in terms of outputs aligned to the FEGs. Disconnects were occurring across the FEGs in areas such as logistics, infrastructure and, most importantly, our people. The concept and associated processes make us look at capability from three perspectives, output, group and time, and identify who would manage what aspect. Although this sounds simple, there is a lot more to it than meets the eye. The impact on how we were doing business has been significant.

The relationship to knowledge issues lies within the Group management focus on our people and their central role in capability. We will need to develop a method of recognising and valuing that knowledge to ensure that the capability decisions made by our leadership do not focus only on the platform and equipment level. In this process we have to distinguish between the value of people, the value of investing in them and their financial cost. Our current analysis of budgetary savings options sadly only measures their cost.

The Capability and Group Management concept has also driven an organisational change within Air Force Headquarters, with flow-on effects at the operational and tactical levels. The change relies fundamentally on Headquarters' people networking across the Air Force and the wider ADF, and sharing their knowledge. I am not talking about matrix management here but an integration of the hierarchical structure and permanent and temporary networks focused on common goals or practices. The reorganisation has created the trigger or imperative for behavioural and thus cultural change within the capability management and resource management areas of the Headquarters. This change is proving to be quite challenging.

As a result of this change some elements of the Headquarters are the subject of a knowledge management experiment managed by the CDF fellow for the year 2000, Squadron Leader Trevor Plant. This experiment is examining how changes in the culture, work processes and support tools will allow us to share knowledge in more effective ways. If we prove successful, we plan to migrate the changes across the Air Force and to work in partnership with the other Services and ADF Headquarters in promoting a knowledge-sharing work environment.

I am reluctant to couch what we are doing purely under the umbrella of 'Knowledge Management', although it is a significant element of our activity. In my limited experience, knowledge management programs are often tools-focused, with a large element of data warehousing and tools (often expensive tools). To me much of that is information management and falls far short of what we are trying to achieve with knowledge. I am also cautious because I see a risk of knowledge management becoming just another management fad which will soak up scarce resources for limited gains. One thing is evident – there is no package or checklist solution – it is a complex issue where the solution must be tailored to the particular demands of the people to be supported. It is not something that a consultant can do in isolation – the people themselves have to own the change.

Our intention is to demonstrate the value of our knowledge program by early 2001. The results will be made available on the Air Force Intranet system.

**Intellectual Capital**

The last focal area I will talk to today is that of Intellectual Capital. I am using the term Intellectual Capital to encompass intellectual material; that is knowledge, information, intellectual property and experience that can be put to use, in our case, to deliver air power.

I will give an example of one of the activities in this area. It should be viewed as a seed for building intellectual capital across the Air Force and not an end in itself. The example I will relate is the redesign and refocusing of the Air Power Studies Centre[8] (APSC), the body that is organising this conference. Whilst the people of the APSC have served us well for many years and have been responsible for considerable development of our intellectual capital, in particular our air power doctrine, we have decided that it is time to reassess what outcomes we must achieve in the future. We

[8] The Air Power Studies Centre is now the Aerospace Centre.

seek to have a centre of excellence in aerospace power and more than a studies centre. We want a centre which attracts the best of our people and encourages them to develop strategic doctrine, explore its application, and promote an understanding of aerospace power and its contribution to Australia's security. Most importantly, we seek to create an environment in which we can develop the knowledge of our people, and share it across the wider Air Force. This should feed back directly to how we do operate and how we plan for our future.

So, what is different from the recent past? The centre will be fully integrated in the development and implementation of the Air Force Strategic Planning framework. Our people undertaking fellowships at the centre will be selected more competitively to work on an element of the strategic planning framework and will develop their component with inputs through wider networking relationships within the ADF, academia, industry and the public. They will then be posted to the appropriate area where they can initiate or execute that element of the plan they developed. In other words we want to develop their knowledge in a dynamic and networked environment with the commitment of implementing their ideas when they complete their fellowships. We want them to build on and use that knowledge. The days of publishing papers with ideas and suggestions for action only to have them adorn our shelves are gone. Simply put, we cannot afford to waste the knowledge we grow.

I do not have the time to detail the changes for the APSC, or the Aerospace Centre as it will be known henceforth. Some of you may wish to talk to the Director Aerospace Centre, Group Captain Al Crowe, regarding this issue. One element I will highlight as it picks up on the issues of knowledge I discussed earlier in my presentation is an increased focus on the review of the human dimension. The theme of this will be educating the leaders and leading the educated. A simple but significant theme that is related fundamentally to growing, employing and sharing our people's knowledge which acknowledges the reality of our changing people and society.

## CONCLUSIONS

I have addressed the issue of knowledge from two directions, the latter related to how knowledge initiatives fit into a larger plan to transform the Air Force. Why? Because as I said at the start it is your knowledge that is the critical factor in our ability to employ air power effectively and to win the battles we fight.

To conclude, I want to leave you with these thoughts. Overall we do pretty well for a small air force – our track record is good. However, we have some problems in the way we manage our people and particularly the way we grow, employ and share our knowledge. The future promises to be more complex and ambiguous. With fewer numbers in uniform and potentially less relative technological advantage, we must get the best out of people if we are to win as warfighters. We need, therefore, to ask ourselves how we can get better at what we do and how we can change to meet the new demands of the future. We haven't got all the answers but we are developing the plans and we have initiated a number of activities that are designed to improve our warfighting capability.

So what does this mean for you? Your participation in the initiatives and ownership of the solutions will be critical if we are to succeed. When you get the opportunity, participate fully in the planning or in one of the initiatives. Remember that without you the plan is just a paper or a PowerPoint slide. With your involvement it becomes real. Then we will meet the challenges of the future and improve our warfighting capabilities.

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## *DISCUSSION*

*Unfortunately, due to circumstances outside the control of the publisher, the initial part of the discussion period following Air Commodore Blackburn's presentation was unavailable for publishing.*

*Air Commodore Garry Bates (RAAF):* I enjoyed your presentation, it was music to my ears and I am sure to many of us. If we look back over the last decade though of Defence change we could probably summarise it as a TQM, RAAFQ, FSR, CSP, DER, DRP and, unfortunately, we might be entering the new decade with the label KPMG.[9] My point is that we have repeatedly demonstrated an intent to change, to move into a future, but obviously we have repeatedly failed to convince the Government that we can get there. The outcome is that the Government dictates a solution to us, based primarily on what we were trying to do anyway, and it tends to drive us back to the lowest common denominator. How are we going to avoid that occurring for this decade?

*Air Commander Blackburn:* OK – one of my hobbyhorses. What I am talking about here is Air Force change. If we do this in isolation we're doomed. What we have got to do is initiate within our Services, and then work with the others to have an ADF or whole-of-Department change. This is why we have some of the initiatives that the Secretary and CDF are looking at now, like the Capstone Program – how do we actually knit together our three Services and the civilian part of the Department at the higher levels to get a good understanding, a team understanding, of what we are trying to do. The problems we have got within Air Force culture, and I think most people would probably agree that there is some degree there, are much larger across the whole Department. We need to start, I think, within the Services to build this understanding, to cooperate within Defence and then the next most important stage, I think, comes to a gentleman here down on the right hand edge [where the RAAF PR liaison officer was seated]. We have got to engage the public, the media and our Government far more than we have ever done before, to explain to everybody what value we have – what do we actually bring to the nation – and what the issues are, and I don't think we've done that adequately in the past. I think once we start to get our internal act sorted out – in other words once we've got a product to sell that says, now this is clearly what we're

[9] Editor's Note: KPMG is an international, accounting, investment and business consulting firm.

trying to do and here's how we are going about it – it's then engaging the broader Australian public to try and inform them. To me that's the only way we can approach it, rather than just sitting inside and saying, well our value is absolutely obvious and people will wake up to it one day.

# COMMAND, LEADERSHIP AND AEROSPACE POWER

DR ALAN STEPHENS

According to the Australian Army's website, in comparison to their Air Force and Navy counterparts, Army officers have a greater depth of understanding of the relationship between strategy and tactics, especially at the operational level of war, and they are probably more predisposed towards joint operations.[1] Noting in passing my admiration for the boldness of that statement in an era of grim, omnipotent joint thought-police, I believe it raises some important and legitimate issues, albeit perhaps unintentionally.

Put simply, I infer from that passage that the authors believe army officers make better joint force commanders than air force and navy officers. The inference prompts at least three questions.

The first and most obvious is: what kind of joint force? Historically it has been the case that substantial air/land operations almost invariably have been commanded by soldiers, and properly so. In the industrial-age warfare which characterised conflict for most of the 20th century, seizing and holding ground was almost invariably a *sine qua non* for success. Consequently, it is difficult to find instances from World War I through to World War II, Korea, Malaya, Vietnam and the Gulf where an airman was the commander-in-chief of a clearly-defined campaign with little or no involvement from land forces. Dowding during the Battle of Britain, and Harris and Spaatz during the Combined Bomber Offensive are rare exceptions. Even NATO's exclusively-air campaign against Yugoslavia in 1999 was commanded by a soldier, General Wesley Clark.[2]

The second and only slightly less-obvious question is: how relevant is the model of industrial-age warfare today if, as many defence analysts believe, we are experiencing a revolution in military affairs (RMA) and are moving into an era of so-called information or third-wave warfare?[3]

The third and, I suspect, much less-obvious question is: if we are indeed experiencing an RMA, in which the word 'revolution' means what it says, how useful is it to continue to categorise military commanders by the traditional division of land, sea or air specialist?

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1 Project Opera (Officer Professional Effectiveness Review for the Army), Submission 1 – Review Report, para 34, http://www.army.gov.au/, May 2000.

2 I have excluded the air campaign directed by USAF General Mike Ryan in September/October 1995 during Operation DELIBERATE FORCE in the Balkans as the outcome of that campaign was also dependent on action by Croatian ground forces. See Colonel Robert C. Owen, 'The Balkans Air Campaign Study: Part 2', in *Airpower Journal*, Fall 1997.

3 For the most influential expression of this concept see Alvin and Heidi Toffler, *War and Anti-War*, Little Brown, Boston, 1993.

The first issue I want to discuss is the revolution in military affairs. By definition, an RMA will fundamentally affect the nature of warfare. Let me suggest that, in certain circumstances, we are experiencing an RMA. In the first instance the current RMA is being technologically driven, in particular by enormous advances in information technology and long-range precision weapons, and by the emergence of low-observable (that is, stealthy) platforms. The appearance in the coming decade of equally potent technologies, such as hypersonic missiles, increasingly capable uninhabited vehicles, and robotics and micro-systems, will maintain the momentum.[4] Further still down the track the militarisation of space will add yet another, perhaps even more powerful, dimension.[5] Because those technologies are redefining the meaning of terms like 'knowledge', 'mass', 'lethality', 'speed', and 'manoeuvre', the RMA has found its most potent expression in aerospace-based weapons systems. Let me stress that the term I used was 'aerospace', not 'air force'.

Defence forces have now been divided into two groups – those which have advanced aerospace capabilities and those which do not. The consequences of that division have been clear enough to anyone who has wanted to look for ten years, through the extraordinary dominance of the battlespace (that is, land, sea and air) demonstrated by American-led aerospace forces in Iraq during Operation DESERT STORM in 1991, in Bosnia during Operation DELIBERATE FORCE in September 1995, in Kosovo during Operation ALLIED FORCE in 1999, and in the ongoing enforcement of no fly zones in the Middle East. It is a warfighting development of the first order.

Accepting that as a former airman and current employee of the Royal Australian Air Force I bring a certain background to this discussion, let me fortify my argument by referring to the Rand Corporation and the International Institute for Strategic Studies (IISS).

As far back as 1993 a Rand study of joint theatre campaigns concluded that, while nations would continue to need a 'joint land, sea and air force for use in future conflicts', the calculus had changed because 'airpower's ability to contribute to the joint battle has increased'.[6] More recently, the International Institute for Strategic Studies' 1999 annual report gave a different slant to the same conclusion. According to the IISS, major powers now prefer air wars to all other forms of combat, and will be reluctant to use ground troops in the future.[7] 'Zero risk is the new mantra of major military powers', the Institute wrote, 'with Tomahawk cruise missiles and smart bombs the new weapons of choice'. 'Air power is nowadays the best way to do a job without putting the lives of soldiers at risk', the IISS concluded. By citing ship-launched cruise

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4 For a startling but authoritative brief on robotic developments see Tim Radford, 'Robotic future rushes towards us', in *The Guardian*, May 1, 2000. Among other things Radford reports that: Robot-controlled taxis will be in use by 2007; TV journalists will be able to transmit what they see using sensors in their optic nerves by 2010; and by 2030 there will be more robots than people in developed countries.

5 See William B. Scott, 'Innovation is Currency of USAF Battlelab' and 'C2Sim Explores Missile Defense', in *Aviation Week & Space Technology*, April 3, 2000, pp 52–4 and 56–7.

6 Christopher Bowie et al, *The New Calculus: Analyzing Airpower's Changing Role in Joint Theatre Campaigns*, Rand, Santa Monica, 1993, p 83 (emphasis in original). The authors' reference was specifically to the United States but their observation has general relevance.

7 'Air wars are most frequent form of combat: Report', Agence France Press, London, 21 October 1999. See also Christian Bohmfalk, 'Tactical Tomahawk could drop submunitions on battlefield', in *Inside the Navy*, April 18, 2000.

missiles as one of their indicative preferred weapons, the Institute lends emphasis to my argument that the subject I am discussing here is not air forces, but air power.

The transformation of war noted by Rand and the IISS has been crystal clear to those admirals and generals who, for the past half-century, increasingly have sought to replicate within their navies and armies – that is, within forces which ostensibly operate on the earth's surface – precisely the kinds of capabilities which until very recently were the prime preserve of airmen: capabilities which commit relatively few combat forces to achieve such outcomes as fast broad area surveillance, real-time reconnaissance, rapid reaction, control of the air, deep strike, and theatre control, all increasingly characterised by precise, high-speed parallel operations. The coordinated application of those capabilities is often described as 'distance warfare', and it allows those who can do it to pursue strategic effects from the very outset of conflict.

While my reference here is to advanced defence forces there is no doubt that others have learned the lesson, as demonstrated by Russia's inept but, I suppose, ultimately successful campaign against Groznyy in late 1999/early 2000. China also reportedly has absorbed the lessons of recent American and NATO aerospace campaigns and is planning to use its air power more pro-actively. 'Air power will become the main fighting force in local wars', the commander of the People's Liberation Army Air Force, Lieutenant General Liu Shunyao, was quoted as saying recently, 'and [will also] have increasing influence on the progress and outcome of war'.[8]

Let me repeat: I am not talking about air forces and air power, but about defence forces and aerospace power. The fact is that in the past decade many organisations which we traditionally have called 'armies' and 'navies' have acquired immensely powerful aerospace-based capabilities.

A review of force structure developments in the land and sea arms of advanced defence forces since World War II will show almost without exception an enormous growth in aerospace capabilities. Since the mid-1980s the overall size of many advanced armies, navies and marine corps has decreased, while simultaneously their embedded air services have increased in proportional or real terms. Within NATO, for example, between 1986 and 1998 surface forces typically were cut by 30 to 60 per cent, about the same percentage by which navy and army air arms were expanded.[9]

Striking instances include the Swedish Army, which reduced its manpower by 25 per cent and its number of main battle tanks by 38 per cent, while increasing its number of aircraft by 62 per cent; and the British Royal Navy, which reduced manpower by 32 per cent, surface combatants by 36 per cent and submarines by 56 per cent, while

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8 Quoted in Robert Wall, 'Chinese War Plans Emphasize Air Force's Offensive Role', in *Aviation Week & Space Technology*, February 28, 2000, pp 29–30; see also Robert Kagan, 'How China will take Taiwan', in *The Washington Post*, March 12, 2000, p B07.

9 Air Commodore Andrew Vallance, 'Purple Air Power – the Future Challenge', in *RAF Air Power Review*, Vol 1, No 1, 1998, pp 17–26. See also Robert Holzer, 'US Navy Sets Sights on Growth, New Roles', in *Defense News*, March 13, 2000, pp 4–18. It is also noteworthy, if by no means conclusive, to note that at least some Australian Army officers believe the attack helicopters their Service hopes to acquire will be their 'most potent capability': see Colonel Trevor Jones, quoted in Max Hawkins, 'Army Beefs Up its Most "Potent Capability"', in *The Australian*, Defence Update, November 1998, p 2.

increasing its aircraft numbers by 30 per cent.[10] Those figures are representative of a general trend within advanced military forces.

Also noteworthy are budgetary trends in the United States. In 1996 the United States Air Force spent 43 per cent of its total financial allocation on 'aerospace centred' assets (platforms, munitions and their support equipment) as opposed to 'non-aerospace centred' expenditure (infrastructure, salaries and the like). It may be surprising to learn that that 43 per cent only just exceeds the 39 per cent expended by the US Navy on similar capabilities; and that it is not greatly in excess of the 29 per cent spent by the US Army.[11] Nor is it a coincidence that in the Pentagon today one of the most bitter turf battles is being fought out between the Air Force, Navy and Army over who will own and operate the emerging missile capabilities associated with theatre deep strike and anti-missile defence – roles which in the past would have been regarded as the natural preserve of the Air Force and which we customarily have titled 'strategic strike' and 'control of the air'.

Among other things, what those trends indicate is that while seizing and holding ground might still be a primary **objective** of many military actions, it is no longer necessarily the primary **means** for achieving that objective. As Eliot Cohen noted more than five years ago, 'In the future, the struggle for information may take the place that the contest for geographic position took in the past'.[12] The passing of time has reinforced Cohen's interpretation of military affairs, although perhaps today he might have spoken more in terms of the preference for, and enhanced capacity to wage, distance war.

This is not a theoretical construct: as noted above, it is a concept of operations which has been applied with a vengeance by American-led coalitions for the past ten years. Most importantly, nor is it a concept which can be practised only by the United States. On the contrary, it is within reach of any medium-sized developed country which is capable of complementing technological excellence with unencumbered vision. Israel provides a topical model.

Since World War II few countries have been subjected to greater military aggression than Israel, as a consequence of which few countries have developed a more effective or respected defence force. As the changing face of war alters the security calculus in the Middle East, Israel is planning to expand the influence, size, range and strike power of its aerospace forces.[13] The new Israeli model will concentrate on air and space systems, including: the Arrow anti-ballistic missile defence system; the Python 5 enhanced short-range air-to-air missile; a beyond-visual-range air-to-air missile; a very long-range, precise, high-speed air-to-surface missile; a long-endurance, high altitude

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10 Vallance, 'Purple Air Power', pp 18–20. The numbers for 1986/1998 were: Swedish Army – manpower 47,000/ 35,1000; tanks 870/539; aircraft 66/107: British Royal Navy – manpower 70,600/48,000; surface combatants 60/38; submarines 32/14; aircraft 175/227.

11 Figures provided by Lieutenant Colonel Peter Faber, USAF, e-mail to author, December 1998. See also Richard P. Hallion, 'Military Power and the Revolution in Military Affairs', a paper delivered to the British Higher Command and Staff Course, Bracknell, 9 March 1999, pp 10–11.

12 Eliot A. Cohen, 'The Mystique of U.S. Air Power', in *Foreign Affairs*, Vol 73, No 1, January/February 1994, p 113.

13 David A. Fulghum and John D. Morrocco, 'Israel Air Force to Grow in Size, Power and Range', in *Aviation Week & Space Technology*, April 10, 2000, pp 62–5.

UAV armed with those missiles and which can loiter over a threat area for about 60 hours; a second long-endurance, high altitude UAV, this time low-observable and with an information gathering function; AWACS systems; manned JSTARS and Sigint systems; and a space program which includes Israeli-owned and operated satellites.[14] As one senior Israeli officer remarked, 'Look at DESERT STORM – not a single tank flew over Baghdad'.

War itself is, of course, nothing more or less than a political tool; and the transformation we are experiencing in the preferred method of fighting major conventional conflicts has been accompanied by equally radical developments in acceptable political end-states. A great deal has changed in the way in which many nations now choose to deal with aggression. The preferred model is defined by three key features: the need for a rapid resolution; an emphasis on negotiated settlements rather than unconditional surrender; and the imperative to minimise casualties on both sides.

I now want to discuss those developments in the context of command and leadership.

The colour of the uniform worn by a weapon system's operator makes absolutely no difference either to how that system works or what it can do to those on the receiving end. On the other hand, the extent to which uniform colour influences the thinking and command and leadership style of its wearer is decidedly problematic. Consider, for example, Martin van Creveld's template for analysing military command, which turns on the search for certainty: certainty 'about the intentions of the enemy, the environment of battle, and the character of one's own forces'.[15] Those are factors which are all shaped by an individual's training, socialisation and experience. This is a fascinating subject to which I shall return shortly, but let me add some substance now by noting the different attitudes towards waging aerospace war demonstrated during Operation ALLIED FORCE by NATO's General Clark and his joint force air component commander, Lieutenant General Michael Short.

The two Americans maintained a facade of unity during the campaign but postwar comments have exposed a fundamentally different understanding of aerospace war. While the soldier General Clark gave priority to 'massive and laborious' and, as it transpired, strategically dubious air strikes against Serb land forces in Kosovo, the airman General Short wanted to pursue strategic effects and wage asymmetric war by striking against 'pivotal targets' in and around Belgrade which were valued by the Milosevic regime.[16] As I interpret those differing approaches, General Short believed that General Clark's understanding of aerospace power strategy was incomplete. This is not so much a comment on General Clark as an observation on individual socialisation and contemporary joint warfare.

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14 Fulghum and Morrocco, 'Israel Air Force to Grow in Size, Power and Range'.

15 Martin van Creveld, *Command in War*, Harvard University Press, Cambridge, Massachusetts, 1985.

16 John A. Tirpak, 'Short's View of the Air Campaign', in *Air Force Magazine*, September 1999, pp 43–7. The inference that Milosevic did not 'value' his land forces in Kosovo is correct in Short's opinion. See also Rebecca Grant, *The Kosovo Campaign*, Air Force Association, September 1999.

What all this means so far is that if the model of the changing face of war I have outlined is accepted then we could reasonably challenge the Australian Army's assertion regarding joint operations and, as a consequence, its implication regarding joint force commanders.

Before proceeding to do precisely that, there are, inevitably, caveats and complications to acknowledge. The most formidable arise from the reaction of rogue states and other possible aggressors to new era warfare. Potential aggressors know that any United States-led coalition will as a matter of first choice want to exploit its incontestable aerospace power superiority; and they also know that anyone who challenges that superiority will lose. Consequently a range of 'asymmetric' or 'unrestricted' warfare responses has been proposed in recent times. The concept received wide exposure following the publication last year of a book by the Chinese People's Liberation Army which postulated attacking militarily superior opponents with one or a combination of chemical and biological means, computer hacking, sabotaging national institutions, assassination, urban warfare, and so on.[17]

Some of those proposals would represent a dramatic contrast to distance warfare. For example, according to the US Marines, future urban warfare is likely to be characterised by close-up fighting in mega-cities into which vast numbers of displaced, disadvantaged and alienated people with irreconcilable value systems are crowded and are competing for limited resources.[18] That is a disturbing scenario. Similarly, no-one should be sanguine about the nature of the now-prevalent, misleadingly-named 'peace operations', which almost invariably demand large numbers of people in place and, therefore, at risk, on the ground.

In other words, there should not be the slightest doubt that our armies still need to be capable of closing with and killing large numbers of the enemy and, if necessary, of sustaining heavy casualties themselves. But to return to my point concerning acceptable end-states and the changing face of conflict, that is an approach of last resort. It is at odds with contemporary political and social morés; it fails to exploit our technological comparative advantage; and it ignores our preferred model of warfighting. It is an approach which should, and probably will, be countenanced only when national survival is at risk. Moreover, as Dr Hallion argued convincingly in his paper, aerospace power already offers informed commanders a formidable capacity to respond forcefully and effectively to asymmetric threats.[19] And there is also considerable scope for the armies of advanced nations to make far more use of high technology against asymmetric opponents. Indeed, according to a number of land warfare specialists, as technologies like all-weather detection systems, smart weapons, robotics, miniaturised personal computers and satellite data links enter the inventory of

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17 Qiao Liang and Wang Xiangsui, *Unrestricted Warfare*, PLA Literature and Arts Publishing House, Beijing, 1999, http://www.terrorism.com/documents/unrestricted.pdf.

18 See for example 'The US Prepares for War in the Cities', in *Earth Island Journal*, March 22, 2000.

19 Richard P. Hallion, 'Air Power and Asymmetric Threats', a paper prepared for the RAAF Air Power Conference *Air Power and Joint Forces*, Canberra, May 2000. See also Lieutenant General Norman A. Schwartz and Colonel Robert B. Stephan, 'Don't Go Downtown without us: The Role of Aerospace Power in Joint Urban Operations', in *Aerospace Power Journal*, Spring 2000, pp 3–11.

modern armies, we can increasingly expect tomorrow's infantryman to fight less like yesterday's digger and more like today's fighter pilot.[20]

It might be useful if I summarise thus far. Any defence force which does not remain physically and intellectually prepared to close with the enemy will be professionally derelict. However, for advanced nations that is now a tactic of last resort. Indeed, at a time when the Australian Army's website suggests that ground force officers make better joint commanders than their air (and sea) force counterparts, the armies of many developed nations are in the process of turning a large proportion of their order of battle into de facto air forces. Additionally, the adoption by developed nations of distance warfare as the preferred method of warfighting would seem to bring into question both the traditional form of joint warfare and the historical primacy of land commanders.

That summary brings me back to my point of several minutes ago concerning the colour of uniforms and the mindsets of the people who wear them. Specifically, are the command and leadership qualities needed for distance warfare the same as those needed for close-up warfare? Can the qualities needed to successfully prosecute both models – for example, a strategic strike campaign on the one hand and urban warfare or peace operations on the other – genuinely coexist within the one individual? If not, is one set of experiences more relevant than another? What kinds of qualities does a 21st century joint force commander need?

In my attempt to cast more light than heat on the subject I shall start with some general observations on command and leadership, and then gradually sharpen my focus.

Command is the lawful authority granted to an individual by virtue of rank and/or appointment. By definition, therefore, in a strict legal sense, anyone can be a commander. There are many ways to effect command, including legislation, rank, seniority, appointment, discipline, punishment and reward. In practice we would expect to see a combination of those mechanisms being applied.

I should like to make a minor but relevant digression at this stage, to suggest that the nature of command is changing significantly.

In 1998 the then Chief of the Australian Defence Force, General John Baker, expressed concern about the exercise of command, noting that it was becoming increasingly complex, and that the ADF's preparations for the future had not kept pace with the reality of the present.[21] General Baker identified three broad problem areas.

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20 See for example Office of the Assistant Secretary of Defense (Public Affairs), 'Darpa and Army select contractors for future combat systems', May 9, 2000 http://www.defenselink.mil; Kim Burger, 'Army's top scientist outlines $6.4 billion science and technology plan', in *Inside the Army*, May 2, 2000; Kim Burger, 'Sensors can provide affordable overmatch for Future Combat System', in *Inside the Army*', April 18, 2000; William B. Scott, 'Army Battlelabs Link Ground Warriors to Space', in *Aviation Week & Space Technology*, April 3, 2000, pp 54–7; and Kevan Wolfe, 'Soldier of the future: Technology leaves armed forces with nowhere to hide', in *Asia-Pacific Defence Reporter*, June/July 1997, pp 16–17.

21 CDF 124/1998, 29 April 1998 (Annex A to CAFAC File CAF 98/35808, 'Review of Preparation and Support for Command', 17 March 1999, Air Force Headquarters).

First, changing societal attitudes have meant that the traditional internal ADF support mechanisms for subordinates are being challenged by the availability of external counselling and appeal systems in the wider community. Whereas defence forces historically have influenced all aspects of their members' lives, there is now a greater movement in society towards self-reliance and privacy for the individual. Second, developments in administrative law have given rise to instances of legal requirements which supersede traditional command issues.[22] And third, the traditional notion of 'command responsibility' has been undermined to some extent by external pressure to achieve so-called workplace 'efficiencies', resulting in greater devolution of responsibility, occasional inadequate supervision, and an increased risk of inexperience leading to errors of judgment.

What those changes mean is that the principles of command which obtained when the great majority of this audience joined the defence forces are being seriously challenged. In other words, any revolution defence might be experiencing extends far beyond technology.

Which brings me to leadership. At the risk of stating the obvious, a commander need not be a leader. The whole point of the notion of 'leadership' is to get people to do things how we want them done, when we want them done. But an individual's ability to make other individuals want to do something – that is, to inspire them – cannot rely on legislation. That is, the word 'leadership' describes a set of more abstract qualities than does 'command', because it incorporates attributes which tend to be innate as opposed to acquired. Here, I am referring to things like presence, personality, charisma and intellect. Leadership is an art and is not inherent in rank, seniority or appointment. Formal status might help to establish leadership but it is unlikely to be sufficient in itself.

Nevertheless, it is important to appreciate that many aspects of leadership can be learnt, which is one reason why places like the Australian Defence Force Academy exist. An individual can enhance his or her leadership skills through a number of means. For example, they can develop expertise in disciplines ranging from administration to strategy to combat; they can accumulate personal experience; they can study the classical texts; and so on. Even qualities like 'charisma' can be learnt to some extent: look at the way in which great stage actors manipulate our emotions; or, to take a grotesque but compelling example, look also at the way in which one of the 20th century's most charismatic orators, Adolf Hitler, used film and drama coaches to rehearse his speeches.

What is it that makes a commander and leader; and why is it that some individuals succeed and others do not?

John Keegan has noted that analyses of commanders tend to focus on one or both of two sets of **qualities**.[23] The first of those qualities is personal **characteristics**, which are usually defined in terms of intellect, energy, decisiveness, self-confidence, and

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22 See for example Joint Standing Committee on Foreign Affairs, Defence and Trade, *Military Justice in the Australian Defence Force*, Parliament of the Commonwealth of Australia, June 1999.

23 John Keegan, *The Mask of Command*, Jonathan Cape, London, 1987, pp 1–11. (Keegan's comments indicate, incidentally, that he does not necessarily endorse this approach.)

professional expertise. The second is **behaviour**, which is perhaps most usefully described as the capacity to get things done; that is, it is the way in which a commander chooses to direct subordinates and fighting forces using one or a combination of encouragement, dissuasion, coercion, inspiration, and so on.[24] Keegan's 'characteristics' and 'behaviour' might be regarded as analogous to Clausewitz's *coup d'oeil* and resolution.[25]

To those two sets of qualities let me add a third **factor**, namely, the **predetermined circumstances** under which various commanders operate; that is, objective forces such as the setting, the geography, the era, and the values which obtain at the time a commander occupies centre-stage.

I think I would be right in saying that characteristics are the easiest to start with, and that it would not be unreasonable to generalise that the great majority of successful commanders have possessed energy, decisiveness, confidence and professional expertise in very large amounts.

Turning to behaviour – that is, the way in which a commander inspires, exhorts, drives, motivates, and so on - the models are many and various. Let me provide some examples.

With Alexander the Great you got the lot: rare inspiration from personal example on the battlefield; military genius; an extraordinarily engaging personality; great and sincere generosity; yet on occasions horrific and peremptory cruelty, even to longstanding and loyal friends.[26]

Like Alexander, Horatio Nelson inspired those who served under him. To quote one contemporary: 'The power to arouse affection and the glow indicating the fire within are noted by all who ever looked Nelson in the face'. Again like Alexander, personal inspiration was accompanied by appalling cruelty, in Nelson's case, the institutionally-based, systematic brutalisation of the lower decks which was one of the characteristics of the Royal Navy of that era.

What a contrast to those inspirational 'lead-from-the-front' heroes the commander of the Royal Air Force's bombing campaign against Germany in World War II, Air Marshal Sir Arthur Harris, provides. Harris seems to fit squarely into Clausewitz's belief that a commander must have the moral courage to be ruthless towards his own troops as well as those of the enemy.[27] Single-minded, determined, ruthless, relentless,

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24 'Characteristics' and 'behaviour' are by definition individual. Nevertheless common patterns tend to emerge. Vincent Orange has identified ten elements in the characteristics and behaviour of one of the greatest air commanders, Marshal of the RAF Lord Tedder, which he believes were central to Tedder's success: ambition; sacrifice; knowledge; welfare; listening; the ability to give orders; *ruthlessness*; patronage; calmness; and grasp of strategy. Most successful commanders could reasonably be expected to possess many of those qualities. See Vincent Orange, 'The Hard Stone', in *RAF Air Power Review*, Winter 1999, pp 76–87.

25 Carl von Clausewitz, *On War* (Anatol Rapoport Ed), Penguin, Harmondsworth, 1982, pp 138–58.

26 See Plutarch, 'Alexander', in *The Age of Alexander* (trans Ian Scott-Kilvert), Penguin, Harmondsworth, 1977; and Arrian, *The Campaigns of Alexander* (trans. Aubrey de Sélincourt), Penguin, Harmondsworth, 1978.

27 Bernard Brodie, 'A Guide to the Reading of On War', in Carl von Clausewitz, *On War* (Michael Howard and Peter Paret, Eds), Princeton University Press, Princeton, 1984, p 676.

acerbic, Harris rarely emerged from his headquarters at High Wycombe. Yet while most of the Bomber Command aircrew he sent to fight and die over Germany each night for more than four years never saw him, he enjoyed a remarkable degree of loyalty from the men he commanded. Perhaps Harris might be regarded as an early model of a successful distance warfare commander.

The third factor I want to mention in this brief discussion on what does or does not make a successful commander is, as I said before, the predetermined circumstances in which a particular commander operates. By circumstances I mean objective forces such as the era, the setting, the geography, the values and the politics. The point I want to make here is that, because of those objective circumstances, what works for one will not necessarily work for all.

For example, in 330 BC, Alexander was not merely a general, he was also a king, an emperor and a pharaoh, and was worshipped as a god. That kind of status gives anyone a flying start. Today, that kind of command model is totally unacceptable in civilised polities.

In 1863 Ulysses S. Grant was the right commander in the right place at the right time. Prior to that he had often been the wrong man in the wrong place at the wrong time. An undistinguished West Point graduate who had dropped out of the Army mid-career and who had been a failure as a businessman, Grant knew what had to be done to win the American Civil War. President Abraham Lincoln had become intensely frustrated by the refusal of a succession of his generals to fight. Like Lincoln, Grant appreciated that the North had an overwhelming material advantage over the South and that, as long as the Union's armies kept engaging those of the Confederacy's and were reasonably competently led, they would eventually win. Grant was not afraid of attrition – that is, of sacrificing lives and material – as he relentlessly and persistently closed with Robert E. Lee's forces, finally driving his opponent to the almost inevitable surrender. (That is something of an oversimplification, neglecting as it does reference to Grant's brilliant use of logistics, especially using rivers for transportation; and his astute understanding of people, but it is essentially accurate.)[28]

One hundred and twenty-six years later, in the 1991 Gulf War, public opinion would never have allowed General Norman Schwarzkopf to have contemplated the model of attrition warfare which Grant exploited so successfully. Schwarzkopf's command considerations had to include possible enemy, as well as friendly, casualties; and he had to make allowance for the fact that his every action would be watched and criticised by a world audience of hundreds of millions. He did all of those things brilliantly. In other words, he operated within the objective circumstances as he found them.

Incidentally, given that forty of the forty-six days of the Gulf War were dominated by the coalition's application of aerospace power (delivered by navy, army, marine and air force weapons systems), General Schwarzkopf's competence as an aerospace commander is of considerable interest. My reading of the popular sources is that his knowledge of the subject was narrow, but his military experience and shrewd intuition

[28] The best insight into Grant's character and leadership style comes from his autobiography, *Personal Memoirs of U.S. Grant*, De Capo Press, New York, 1982.

enabled him to perceive the essential merit of the USAF plan developed by Colonel John Warden's team. Having decided that, in the prevailing circumstances, aerospace power represented his best option, Schwarzkopf was then sensible enough to leave most of the detailed campaign planning and execution to a highly capable air staff.[29]

It is also useful to consider the level of war at which a leader excelled. Many airmen seem to have been excellent squadron and wing commanders – that is, leaders at the tactical level of war – but have been less effective at the operational level. Moving up that particular ladder, General George Kenney was an outstanding commander at the operational level of war in the South-West Pacific – possibly the best in World War II – yet only a few years later he was sacked as commander of the USAF's Strategic Air Command.

Still, perhaps those generalisations say more about the nature of industrial-age warfare than they do about the nature of air command. In fact it is instructive that the only two instances of what I have called 'aerospace power command' at the operational level of war were both exercised by army officers, Generals Schwarzkopf and Clark. In the absence of a larger sample I want to try to fill in some of the gaps on the **characteristics** and **behaviour** of aerospace commanders by turning to the experience of by far the largest and most relevant group, air force commanders.

As I said, there have been many great air force leaders. I have mentioned George Kenney and Arthur Harris. Other names which immediately come to mind include: at the strategic level, Trenchard, Arnold, Portal and Tedder; at the operational level, Dowding, Tedder again, Spaatz, Horner, Bennett, Harris and Le May, and for the RAAF members of the audience perhaps Bostock; and at the tactical level, Gibson, Cheshire, Galland, Scherger, Edwards, Caldwell and so on. That list of names is indicative only: hundreds more could be added.

Let me suggest that there are aspects of air force command which to date have been distinctive. They include at least the following.

Air forces have had a small warrior caste, which has been limited to aircrew in general and pilots in particular. In most modern air forces pilots comprise about 15 per cent of the officers corps. And since 1914 it has been pilots who have constituted air forces' warfighting commanders. I am not saying that has necessarily been good or bad but I am saying it has been different.

The mystique of the pilot has loomed large in shaping the nature of air forces and, therefore, their command and leadership styles. A substantial number of air force biographies, memoirs and critiques suggest that many senior officers have defined their professional position primarily through their competence and status as pilots, rather than as successful commanders.[30] John James made the point humorously and

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29 See H. Norman Schwarzkopf, *It Doesn't Take a Hero*, Bantam, 1992; Richard P. Hallion, *Storm over Iraq*, Smithsonian Institution, Washington DC, 1992; Michael R. Gordon and Bernard E. Trainor, *The Generals' War*, Little Brown, Boston, 1995; Richard T. Reynolds, *Heart of the Storm*, Air University Press, Maxwell AFB, 1995; and Tom Clancy (with General Chuck Horner), *Every Man a Tiger*, Putnam's, New York, 1999.

30 For a small sample, see Valston Hancock, *Challenge*, Access Press, Northbridge, 1990; Clancy (and Horner), *Every Man a Tiger*; Carl H. Builder, *The Icarus Syndrome*, Transaction Publishers,

effectively in *The Paladins*: 'Generals write books on the art of war, or on the pleasures of poetry or painting, while air marshals write books about what fun flying was when they were young ...'.[31] As war in the third dimension moves more deeply into the era of battlespace management, uninhabited vehicles, long-range missiles, infowar, cyberwar and space, the relevance of that narrow experience and 'born to rule' attitude must be vigorously challenged.

Still, at least air force commanders have come from a background which unequivocally values aerospace activities. We all bring our baggage with us, and in this instance it is noteworthy that most air forces started life as a corps of their army, and many found it necessary to break away from the constraints imposed by their 'seize-and-hold-ground' colleagues in order to pursue strategic goals which were not shared. Even today, when aerospace activities increasingly occupy the budgets, if not the full attention, of armies, membership of the aviation corps has rarely been a pathway to senior office within land forces.[32] That apparently remains the case in the world's most powerful army. According to Lieutenant General Johnny Riggs, commanding general of the US 1st Army and one of his Service's leading aviators, there is little thought given to aviation in the new Army vision, to the extent that the branch is in 'crisis'. It is also noteworthy that Pentagon planners are considering attaching an Army brigade to deploy with each of the USAF's ten Air Expeditionary Forces to 'avoid delays like those experienced in moving an AH-64 Apache force during the [1999] Kosovo air campaign'.[33] The intention would be to form an all-arms force 'under the command of an airman' which could move immediately in an emergency.

Most navies have also tended to keep their pilots in their place. The exceptions are, however, instructive. I am referring here to those navies in which aircraft carriers have provided a genuine power-projection capability. The pre-World War II Japanese Navy was one such organisation. As early as 1927, when carriers became central to Japan's Pacific strategy, all officers who aspired to Flag rank had either to have qualified as an aviator or commanded a seaplane tender.[34] The most striking exception is, of course, the United States Navy, whose embedded air power has since the middle of World War II 'determined the character of the fleet itself'.[35] As a Service which for more than half a century has delivered immense aerospace power from seaborne platforms, the USN has valued aerospace commanders, to the extent that captains of aircraft carriers must be aviators and, since 1945, either the Chief of Naval Operations or his deputy almost invariably has been an aviator.[36]

My final observation on what is distinctive about command, leadership and aerospace power concerns distance warfare and the personal aspect of combat. To the soldier who

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New Brunswick, 1994; and Colonel Mike Worden, *Rise of the Fighter Generals*, Air University Press, Maxwell AFB, 1998.

31 James continued: '... admirals do not, or perhaps cannot, write'. John James, *The Paladins* (A Social History of the RAF up to the outbreak of World War II), Macdonald, London, 1990, p 14.

32 Daniel G. Dupont, 'Skeptics and Believers: Aviation has little visibility in the new Army vision', in *Armed Forces Journal International*, March 2000, pp 28–34.

33 'Army Air Corps', in *Aviation Week & Space Technology*, April 24, 2000, p 23.

34 C.G. Reynolds, *The Fast Carriers – The Forging of an Air Navy*, Naval Institute Press, Annapolis, 1992, p 4; R.J. Overy, *The Air War 1939-1945*, Papermac, London, 1987, pp 6–7.

35 *ibid*, p 213.

36 *ibid*, pp 391–4. The current CNO, Admiral Jay L. Johnson, is a naval aviator.

has to walk up to his enemy, look him in the eye, and then stick a bayonet into his guts, air war can seem to be somewhat remote, perhaps even impersonal. In his compelling autobiography *About Face*, the United States' most highly decorated living soldier, Colonel David Hackworth, wrote contemptuously of the remoteness of air combat.[37] I might add that Hackworth showed no comprehension whatsoever of the horror and intensely personal experience of being trapped in a burning bomber over Berlin or Hanoi, and so on; but I suspect his prejudice and, therefore, his mindset, is not uncommon.

A splendid irony emerges here. As I noted previously, within advanced nations the organisations which to date we have described as 'surface forces' – that is, armies and navies – have spent the last fifteen years turning a large proportion of their orders of battle into de facto aerospace forces. Because of those newly-acquired capabilities those nominal surface forces inevitably will increasingly behave like air forces, a process which will be reinforced by our preference for distance warfare over close-up warfare.

Let me conclude. Last year I was associated with an excellent group of postgraduate students, all of whom were either serving members of the ADF or Defence civilians. During a seminar on command and leadership in air forces, the group concluded that the **characteristics** and **behaviour** required by senior commanders were essentially the same regardless of their environmental specialisation, especially at the strategic and operational levels of war; that is, at the levels where joint skills are most in demand. The seminar did not, however, discuss mindsets or predetermined circumstances.

In the decade since the end of the Cold War a consensus has emerged, at least intellectually, that information technology and other new technologies can revolutionise the way in which advanced defence forces prepare themselves to fight. That consensus rests on three operational concepts: first, that air, land and sea forces will operate in smaller, more dispersed units which will concentrate firepower with precision from a distance; second, that there will far less reliance on mass; and third, that space-based capabilities will become increasingly important.[38]

Translating concepts into reality is of course the hard part of the force structuring challenge. We must question the extent to which today's defence forces have addressed that challenge. Armies have continued to emphasise closing with the enemy, be it with heavy or lighter forces; navies have been preoccupied with preserving so-called surface combatants at the expense of thinking about generic capabilities; and air forces have been unable to expand their vision sufficiently with respect to pilotless vehicles, long-range missiles, and high earth orbit.[39]

It is unacceptable for us to dismiss those failings simply as examples of traditional, even desirable, loyalties. Nor is it acceptable to regard such attitudes merely as technical incompetence, even though in a limited sense they are. If we believe that the profession of arms is bounded by a 'burden of military ethics' then we surely should

37 David H. Hackworth, *About Face*, Macmillan, South Melbourne, 1989, p 54.

38 Stephen P. Aubin, 'Stumbling Toward Transformation: How the Services Stack Up', in *Strategic Review*, Spring 2000.

39 The broad ideas here come from Aubin, 'Stumbling Toward Transformation' but the examples have been modified substantially from those he presented.

regard those mindsets as the vastly more culpable sin of moral incompetence. It was James Toner who wrote 'Military training that does not foster soldierly competence is a failure; but military training that does not also inspire soldierly values is a hazard to all concerned with it'.[40] In other words, commanders who sacrifice their troops unnecessarily because they are technically unaware are ethically derelict.

The changing face of warfare and the evolving shape of air forces, armies and navies suggest that the things we will want our joint force commanders to know and do in the 21st century will have a significantly different emphasis from what we wanted them to know and do in the 20th century. The men and women who are going to command our aerospace capabilities need to understand that.

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## *DISCUSSION*

*Rear Admiral Chris Ritchie (RAN):* You're suggesting that we need to change our force structuring practices fundamentally, yet we seem to have been very successful for the past ten years.

*Dr Stephens:* It's true that the West has been militarily successful for the last decade but I would suggest that's largely because the United States has been involved. The ADF needs to pursue the same kind of edge but from a vastly smaller force.

I think the point Air Commodore Blackburn raised about thinking in terms of capabilities rather than platforms is central to our force structuring challenge, which then leads to the growth of aerospace capabilities within armies, navies and marine corps, which I identified. Let me suggest that if we started today with the proverbial 'clean sheet of paper' to build a defence force to prosecute 21st century warfare, we wouldn't end up with an army, a navy and an air force as we now know them. I realise that we have got those services and it's almost impossible to change them overnight. The problem is that, while countries like Australia can afford the kinds of aerospace-centred capabilities I believe we need, we can't afford them within a process dominated by vested single Service interests. For example, researching Air Force history as I do, it's quite plain that for most Chiefs of the Air Staff it was an overriding ambition to get either a new fighter or new bomber for the RAAF. That might be good for the RAAF but what does it mean in terms of broad capabilities? It's an attitude which has outlived its usefulness.

The Minister stated yesterday that the ADF is going to have to choose between different capabilities. This will be very, very difficult, but it must be done. And we won't do the best by the ADF unless we think of capabilities to generate effects, and in the first round of that process leave platforms out of the picture.

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40 James H. Toner, *True Faith and Allegiance: The Burden of Military Ethics*, The University Press of Kentucky, Lexington, 1995, p 40. My thanks to Richard Szafranski for this powerful observation.

*Air Marshal David Evans (RAAF Ret'd):* Alan, I suppose somebody has got to defend the role of pilots. The advances in aviation and aerospace in the 20th century have been quite astounding. Military aviation has gone ahead at a pace we could never have envisaged. Now, most of those advances came from requirements for combat capability and strategic use written by pilots. Those advances have reduced casualties and placed the emphasis on exploiting aerospace methods. So, what makes you think pilots - the people who had the vision of how wars should be fought – will be less capable or less successful in the 21st century?

*Dr Stephens:* It's not so much a case of diminishing the contribution of pilots, it's more a matter of being inclusive. In my opinion, the great attribute pilots have brought to planning and force development is their unique situational awareness, developed through combat flying. But I think in recent years other skill groups have emerged who share that awareness: tactical coordinators in maritime patrol aircraft; the people in the back of AEW&C aircraft; and so on. It's also the case, I think, that precise, long-range, air-to-surface and surface-to-surface missiles will play a far greater role in aerospace power of the future, and not too many of us develop situation awareness riding missiles. It's not a matter of criticising pilots, it's a matter of including the much wider range of people and the more complex range of capabilities that aerospace power delivers today.

*Air Commodore Tom Trinder (RAAF Ret'd):* Why do we actually need a uniformed person to lead at the highest level? Why couldn't a General Schwarzkopf be a Mr Schwarzkopf?

*Dr Stephens:* Well, that would really be taking outsourcing to extremes. I don't want to intrude on Wing Commander Ian McFarling's presentation on ethics and the profession of arms later in the conference, but I did make a point of mentioning in my paper that the profession of arms is bound by a burden of military ethics. It's my profound belief that only a soldier, an airman or a sailor, can understand that burden. I believe other people simply don't understand it. It worries me deeply, I might add, that there are indications that excessive civilianisation and outsourcing can undermine the profession of arms, as seems to have been the case with the Canadians in Somalia in 1995. The Government and the ADF need to be very, very aware of that.

*Flying Officer Trent Morris (RAAF):* I have a question that relates to the previous gentleman's and I am going to take it a step back. You pointed out that General Norman Schwarzkopf had no deep understanding of air power and yet he was able to use his air forces most effectively. He wasn't a pilot or a 'warrior' in the air sense. My question then is: Why is it necessary to have a warrior who does have a limited focus because of his natural bias towards his particular specialisation? Why is it necessary to have a warrior in command at the highest level? Why can't we have, say, a logistician or an engineer, an 'air trafficker', the other non-combat sources so to speak who also do have spatial awareness because of the necessary focus of their job to look at the long-term capabilities of a defence force?

*Dr Stephens:* As I noted in my presentation, General Schwarzkopf did a wonderful job but that's not the issue here. One of the number of points I was trying to make was that I think there is an urgent need for all defence force commanders to have a far better understanding of aerospace-based capabilities, because I happen to think that's

where the future of warfare is moving. I think a lot of ADF officers have an inadequate understanding of aerospace capabilities, even though all of our single Services operate those capabilities. As far as the non-combatant as a commander is concerned, I don't believe it's a credible proposal.

*Brigadier Jim Wallace (Army):* Alan, I found it surprising that you should contend that the Army is determined to fight close. The United States Army has been conducting Force 21, which has been an experiment about future warfighting, about introducing technologies that allow us to reduce casualties and fight at range to the maximum degree. The US Marines have done the same. In the Australian Army we've been conducting these trials since 1996, and in 1997-98 we devoted one third of our combat force – the First Brigade which I commanded at the time – to trialling these. So I'll say to you that I think armies are well and truly aiming to fight at range and to employ these technologies.

One thing which we found, which I think challenges some of the ideas you've put, is that the RMA is not just technology driven, as you contend. The RMA is about being able to network these technologies – this is the great strength of the RMA. There's been a lot of technologically driven RMAs throughout the history of warfare, such as gunpowder, the tank, the airplane and what-have-you, but this one is about being able to network them. And from that point of view, certainly in armies, we are devoted to joint operations and to campaigning, because campaigning is about networking your capabilities. I think too that the evidence you gave of armies now trying to include more and more aerospace assets and structures, and indeed to network with air force capabilities is evidence again of the importance we are placing on the need to network and to campaign as a philosophy.

Another thing we found, which again I think challenges some of what you said, is that it doesn't matter how much we want to employ these technologies, in the end they are simply not mature enough at the moment and are unlikely to be mature enough in the immediate term that we can plan to have them. As we found in Timor, unless the enemy can be targeted, you've got to go in there with people on the ground and resolve the issue that way. We will always seek not to have to do that, but I think you're wrong to argue that we should plan a force structure on the assumption that these technologies will work.

*Dr Stephens:* Many of the technologies I mentioned are in fact mature but seem not to figure in the ADF's mindset. For example, long-range strike and defensive missiles have been available for decades yet they've been almost entirely absent from the ADF. That's only one example. Another is AEW&C.

As far as armies seeking to fight at a distance is concerned, I am aware of the studies that have been carried out in Australia and the United States, and I am aware that General Shinseki is currently looking at ways to make the American Army lighter, faster, and so on. I am also aware that only last week Lieutenant General Johnny Riggs, the commander of the US 1st Army and an aviator, was extremely critical of his Service for having absolutely no vision whatsoever for aviation within their new concept of operations. According to Riggs, the US Army Aviation Corps is in crisis. Yet aviation provides one obvious method for fighting at a distance. I've also heard Force 21 described as a Cold War army with a bunch of computers. So I'm not convinced that what's being said on the one hand is what's actually happening on the other.

Your point gets back to what concerns me most; namely, the Minister's comment about having to make hard choices between capabilities. We need to make sure that we're looking at capabilities that meet our strategic guidance and deliver an effect, and don't simply perpetuate single Service preferences. I remain unconvinced that that's the situation in Australia, but thank you for your comments.

# ETHICS AND THE PROFESSION OF ARMS

WING COMMANDER IAN MACFARLING[1]

*Philosophers make imaginary laws for imaginary commonwealths, and their discourses are as the stars which give little light because they are so high.*

Roger Bacon

## INTRODUCTION

In 1932 the International Institute of Intellectual Cooperation, a subordinate body of the League of Nations, asked Albert Einstein to participate in its activities. The Institute suggested that Einstein should open a frank exchange with a person, whom he was free to select, on 'any problem that seemed to be the one that was the most insistent of all that civilisation had to face'. Einstein consequently wrote to Sigmund Freud in July that year with the aim of discussing the issue of war.[2]

Einstein had watched the increasing lethality of weapons with horror. He was also concerned that politicians could not provide the leadership necessary to prevent war or to stem research into new and even more lethal arms. In fact it was obvious that some of those jockeying for power in several Western European nations were intent on using military force to buttress their own position.

Einstein came swiftly to the point in his letter. He knew he lived in a cloistered environment. He realised that working on problems of theoretical physics did not help him offer solutions to the problems of humanity, so he had turned to Freud for advice.

He wanted to know how the majority in any society could be persuaded, or coerced, into doing the bidding of a small and implicitly illegitimate group, especially when the majority stood to lose so much. There was a certain innocence about Einstein that is both astonishing and endearing. He had lived in such a closed world that he did not understand how unpleasant the real one is. He appeared to want something that was concrete – and completely unattainable. He thought that Freud might be able to supply him with a neat template that provided a sequential list to guide his actions in dealing with these dangerous people and the problems they caused. It is perhaps pleasant for mere mortals to realise that even geniuses can be astonishingly naive, particularly in an epistemic sense.

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1 I would like to acknowledge the kindness and hospitality of Professor Hilary Schofield of the University of Melbourne and Associate Professor Hugh Smith of University College, The University of New South Wales, who both made valuable inputs and helped me to focus on the issues.

2 All of the correspondence between Einstein and Freud cited in this paper is from Sigmund Freud, *The Standard Edition of the Complete Psychological Works* (James Strachey Ed), Hogarth, London, 1964, Vol 22, pp 198–215. A useful commentary on this is provided in J. T. Fraser, *Time, Conflict and Human Values*, University of Illinois Press, Chicago, 1999, pp 103–107.

Freud was not susceptible to Einstein's blandishments. He had met the scientist once before in 1927 and had reported to a friend that 'Einstein understands as much about psychology as I do about physics, so we had a very pleasant talk'. He thought that he was about to embark on a sterile and tedious discussion and the tone of his reply suggests some condescension.

Freud was insistent that war is a practical problem. He also felt that he could only offer observations on issues of war as they appeared to a psychological observer. He pointed out to Einstein that human instinct plays the major part and both love and hate are essential. 'They are phenomena [that] arise from the concurrent or mutually opposing action of both', or, as Doris Day used to sing in the plastic morality days of the 1950s 'you can't have one without the other'.

Freud was clear that force meant violence, which when brought to bear, would ensure that the victor achieved his end-state. It is important to realise the essential nature of an end-state in war and I shall discuss to this later in the paper. Freud went further. He noted that 'when human beings are incited to war they have a whole range of reasons for assenting – some noble, some base, some which are openly declared, some which are never mentioned. A lust for cruelty and destruction is certainly among them'. But the most important point that he raised in his letter in the context of this paper was that 'there is no use in trying to get rid of men's aggressive inclinations'. He added that it seems quite a natural thing, has a good biological basis, and in practice appears to be scarcely avoidable.

His contemporaries agreed with him. In his *Discourse on War* the Reverend Stopford A. Brooke had argued that fighting is a primary instinct in human nature saying: 'It comes down to us from the brutes: and linked to it, I can't tell why, is a sense of keen pleasure, eagerness, and exaltation. We cannot get rid of this hereditary passion. It is universal, as acute in the civilised as in the savage'.[3]

Freud's view of conflict was in many ways a paraphrasing of Clausewitz, who had few illusions about war and the behaviour associated with it. One of Clausewitz's most celebrated comments about war was: 'Attached to force are certain, self-imposed, imperceptible limitations – hardly worth mentioning – known as international law and custom, but they scarcely weaken it'.[4]

It is possible to argue that Clausewitz was talking about the reasons for going to war (*jus ad bellum*).[5] However, my position is that he was talking of both the reasons for going to war and the way the combatants behave when they fight one another (*jus in bello*).

There are very few events in the recorded history of war that contradict Freud, the Reverend Brooke, or Clausewitz. In this paper I want to examine the place of ethics in

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3 Stopford A. Brooke, *Discourse on War,* cited in J. Bourke: *An Intimate History of Killing*, Granta Books, London, 1999, p 97.

4 Carl von Clausewitz, *On War* (trans Howard, M. & Paret, P.), Princeton University Press, Princeton NJ, 1984, p 75.

5 I would like to thank Associate Professor Hugh Smith at the School of Politics, University College, The University of New South Wales at the Australian Defence Force Academy for his views on this.

the profession of arms to see under what circumstances ethics might have some influence? For example, John Gooch's discussion on British reaction to increasing German maritime competition in the early part of 1904 includes a comment that scruples became an unaffordable strategic luxury in the face of an increasing German threat to the British Empire.[6]

I am also concerned that few people have a grasp of either the meaning of war, especially in its modern, post-Cold War form, or the problems associated with trying to link war with both the profession of arms, and the ethical behaviour that military officers should adopt as a matter of course.

## SELF-IMPOSED LIMITATIONS

The major limitation that professional armed services impose on themselves is ethics. One of the problems of discussing ethics is the fact that they cannot be defined with any precision. Wittgenstein maintained that 'it was clear that ethics cannot be put into words [because they] are transcendental'.[7] It is therefore far easier to discuss the aim or the product of ethics rather than the ethics themselves. The concepts that describe what ethics roughly contain are fairness, justice, integrity, good and bad, right and wrong, moral decency and obligation. I have not attempted to subdivide them into the natural and supernatural virtues here, because those are quicksands where only subtle theologians would dare to tread.

As Freud pointed out in his correspondence with Einstein, war is 'an intensely practical problem'. For the profession of arms, therefore, the issue is not theoretical. It is the fundamental problem of knowing what is right and then doing it. And this uncovers a rat's nest for the military practitioner.

The British Army officer Brigadier Shelford Bidwell suggests in his writing that ethics and professional requirements frequently clash. His remark that 'no general ever won a war whose conscience troubled him or who did not want to beat his enemy too much'[8] points to the fact that some senior commanders in the profession of arms could have a significant psychological problem in trying to perform the tasks that they are required to undertake.

Conscience, which implies both morality and a level of virtue, is essential to the correct functioning of the individual as a human and a commander. This means that to complete his mission and satisfy his conscience he will have to determine ways to defeat his enemy completely, without damaging his moral basis. The problem for him will be that the framework of assumptions that most of the political elites use when trying to come to grips with issues of peace and war is – by and large – immoral.

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6 John Gooch: 'The Weary Titan: Strategy and Policy in Great Britain, 1890-1918' in Williamson Murray et al (Eds), *The Making of Strategy: Rulers, States, and War,* Cambridge University Press, Cambridge UK, 1994, p 292.

7 Bryan Magee, *Confessions of a Philosopher,* Wiedenfeld & Nicolson, London, 1997, p 116.

8 Norman F. Dixon, *On the Psychology of Military Incompetence*, Pimlico, London, 1976, p 15.

If ethical matters are considered they tend to be set out in highly oversimplified terms suitable for public consumption at the tabloid newspaper level. We should all be aware that ethical reflection does not necessarily provide the commander with an easy way out.

The point I want to stress here (following Freud) is that no-one should be surprised that government policy on security issues is based on reasoning that has little connection with morality. And also the military practitioner's reasoning may take on the same structure. In fact, the historical data from the wars of the 20th century, which I will discuss shortly, point to the fact that morality has rarely been a consideration.

In the midst of all this the realists, neo-realists and sundry others come along to confuse us further. The issue, according to these people, is that ethics are useful only up to a point. They would like us all to realise that things must be seen for what they are instead of what they ought to be. They would also like us to realise that the principal aim of people involved in politics and international relations is power and self-aggrandisement.

Morgenthau, for example, argues that ideals, values and law are not irrelevant to international relations but must be tempered by a clear vision of how power and its pursuit tends to modify relations between states.[9] The national interest must be made secure enough to ensure that any action taken in the name of such values is effective. Realists also argue that you will rarely get a deliberately bad policy if your motives are good, but this never guarantees that the plans you put forward will succeed simply because they are based on a sound values system.

## INTERNATIONAL LAW

Clausewitz felt that international law was 'scarcely worth mentioning'. He was wrong. There are two elements that need to be considered under this heading. The first is *jus ad bellum*, or that part of the law that deals with whether it is legal to go to war. There is general acceptance that national self-defence does provides a just cause for fighting an invader, and this cause can be extended to defending another state from unjust external aggression. *Jus ad bellum* justifies killing the enemy who is attacking you, once your government has decided that you must go to war, but it is also a constraint on war because it forbids the war being fought for vengeance or a desire for retribution. This affects how you fight.

The second element is *jus in bello* which requires you to assess what methods are permissible when you go to fight a war that meets the criteria of *jus ad bellum*. The five criteria that tend to cover all aspects are minimal force, proportionality, discrimination, a reasonable chance of success, and the use of war as a last resort. It is

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9 Hans Morgenthau, 'Six Principles of Political Realism' in Lawrence Freedman (Ed) *War*, Oxford University Press, Oxford, 1994, pp 159–167. See also David A. Welch, *Justice and the Genesis of War*, Cambridge University Press, Cambridge UK, 1995, pp 10–11 for comments on the structure and power of states. Useful comments also appear in Roger Scruton, *A Dictionary of Political Thought*, Macmillan, London, 1982, p 395.

important to understand how these tend to be forgotten in times of dire threat, and I will be discussing them later in the context of new wars.

## PROFESSIONALISM AND THE PROFESSION OF ARMS

A profession is always associated with practical human affairs. The fundamental difference between a particular calling, which we would call a profession, and an occupation is that those who are professional perform a vital service for their clients. A profession has two mutually supporting aspects. It demands both intellectual ability and practical skills, and the word implies a deep and abiding knowledge of a department of learning as well as the continued searching for further knowledge on the subject. Professionals do this by taking account of developments in their field and ensuring that their understanding does not descend into defending dogma or determining the number of angels present on a pinhead.

Altruism is a major feature of the professions. Philosophers have put forward two distinct forms of the concept. One is emotional whereby love, liking, and friendship automatically make another person's interests our own. The other is moral, where respect and considerateness make someone else's interests a reason for us to do something, even though those interests might never become ours. For the professional, altruism takes on the second meaning. For the profession of arms it should be the *sine qua non*.

A profession has several elements that come both explicitly and implicitly from what has been outlined above. Firstly, a profession should have an all-embracing competence in a particular field, and no other elements of society should perform the tasks it undertakes. Thereafter, it should be manifestly competent in the things that it does for its clients, and its performance and standing in society should be such that there is mutual respect and trust between it and the client.

This leads on to military professionalism. Let us assume – and it is a large assumption – that what the military does actually constitutes a profession. We also need to be quite clear that if the state did not exist in its current post-Westphalian form, there would be no profession of arms. Also, if there is no state requirement set down for the raising of military forces, then any armed organisation in that country is at best a militia and at worst a band of mercenaries.

The corollary of the need for armed forces to be legitimate is that the state must also possess legitimacy so that it can provide sponsorship for the armed services on behalf of the parent society. I take legitimacy here to mean both the belief by the governed in the rulers' moral right to issue commands, and the people's corresponding obligation to obey such commands.[10] It is important to note that this set of rulers' right and citizens' obligation might not be ethical. Milosevic's policies for Kosovo in 1999 had widespread Serb support.

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10 Muthaih Alagappa, *Political Legitimacy in Southeast Asia*, Stanford University Press, Stanford CA, 1995, p 29.

The paradox for the military calling is how do you link altruistic service to a state that is involved in what are – at best – amoral practices as part of its struggle for survival in the international arena? And, if the realists are correct in their cynical assessment of politics (and human beings), how do military officers resolve the ambiguity of working directly for people whose principal aims are self-aggrandisement and power?

Any special or unique competence and its associated special tasks and services need to be defined. The armed forces must be competent in the projection and management of violence because the primary role of military organisations is the destruction of the enemy in battle. This competence has some aspects that worry many civilians and consequently affects the legitimacy of the armed forces.

The skills that enable servicemen to perform their task are unsavoury. Freud's comments that I cited earlier support this contention. Civilians not only worry about the moral aspects of killing, they have a concern that these skills could be turned on them, especially when troops come home from war. As August B. Hollingshaw remarked in the American Journal of Sociology in 1946 'it will be impossible for veterans to communicate their inner sense of accomplishment in the fine art of killing to civilians'.[11]

In fact, after World War II some elements of New York society wanted 'reorientation camps' to be established in the Panama Canal Zone, and after the war veterans had been released from their reorientation they would be required to wear an identification patch such as a skull. In the mordant words of one US Marine officer this would 'warn civilians of our lethal instincts – sort of like a yellow star'.[12]

Notwithstanding my previous comments that implied the ever-present need for restraint on the means of violence, the military profession is required to be technically competent. The parent society has the right to expect that their armed forces can fight as effectively as possible in defence of the nation. They outlay a significant amount of money to allow them to perform the task.

There are two aspects here. One is that, as I mentioned before, our civilian masters do not necessarily like the things we do and would prefer us to do it for them – elsewhere if possible. The other is that civilians must not barge into the military domain where the participants require considerable specialised expertise. It would be folly to allow someone outside the armed forces to make technical decisions on how force should be employed on the battlefield.

The military professionals' desire to be left to do their job on the battlefield leads to the final theoretical aspect of military professionalism, which is mutual trust and respect. In the Western World, as in the model provided by S. P. Huntington[13], the armed forces should be too busy making sure they are competent at their primary task, which is the use of force to defend the state against external threat. This means that they should not be involved in politics.

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11 Bourke, *An Intimate History of Killing*, p 352.

12 *ibid.*

13 Samuel P. Huntington, *The Soldier and the State: The Theory and Politics of Civil-military Relations*, Harvard University Press, Cambridge, Massachusetts, 1957, particularly Chapter 4.

Civil-military relations must be structured so that civil supremacy in politics is accepted as the norm. This harks back to my previous comment that the government must be legitimate itself. If it is, then it has the right to tell its military personnel when and where they must fight. It must also be prepared to accept the responsibility for all the consequences of those decisions and to trust its armed forces to do the task without undue interference.

## SUPPORTING HISTORICAL DATA

We now turn to some historical data from World War II that will focus the rest of this paper. In essence, despite all of the theoretical aspects I have just discussed, there is no historical evidence whatsoever to suggest that people have gone to war in the past to fight for the political system that pertains in their nation.

There will always be those who are disaffected and want no part in the ordeal from the very beginning, but the figures for the United States Army in Europe towards the end of World War II show that virtually no-one was there to fight for 'democracy and the American way of life'. Two examples that support this are the focus of men in Italy in late 1944 where the majority of fighting men frequently had qualms about the war, and the disturbing attitudes of some of the surviving American aircrew who fought in the Allied Combined Bomber Offensive over Europe during 1943–45.

In late 1944 a survey of Allied troops at Monte Cassino in Italy showed that about five per cent fought for ideological reasons while, at various times, well over 80 per cent of the American men surveyed did not believe that the conflict they were fighting in was necessary.[14]

For the Americans, the New Zealanders, and their German opponents around Monte Cassino the postwar analysis shows quite clearly that the small group – up to a maximum of ten people – was the focus of **all** behaviour.[15] This was supported by a survey of men in the Pacific War where 'when the going was tough' hatred of the enemy was much less important than prayer and a desire not to let one's mates down. While 38 per cent of the surveyed men were helped by their hatred of the Japanese, 61 per cent kept going because they did not want to be the weak link in their small group. Those who were transferred to another unit for some reason felt that they had become orphans and were lost and lonely.[16]

Next in order of importance was the home front. Particularly in small countries such as New Zealand the family influence was vital. If the unit did well, people at home would know very quickly. And they would certainly get to know just as quickly if it did badly.[17]

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14 Samuel Stouffer et al, *Studies in Social Psychology, Volume 2, The American Soldier: Combat and its Aftermath*, Princeton University Press, Princeton, 1949, p 110.

15 Elmar Dinter, *Hero or Coward – Pressures Facing the Soldier in Battle*, Frank Cass, London, 1985, p 43.

16 Bourke, *An Intimate History of Killing*, p 158.

17 Dinter, *Hero or Coward*, p 190.

Sometimes the individual would consider his immediately superior organisation. But patriotism and the reasons for going to war were rarely, if ever, considered. A point that will come up later in the presentation is that future war may change this balance of loyalties in ways that make life difficult for military professionals.

In the European theatre of operations the United States Army Air Force's 8th Air Force suffered tremendous losses in its daylight campaign against Germany. Table 1, which is taken from the Office of the Air Surgeon's statistics, shows the figures for the first half of 1944:

| Casualty Type / Category | Killed in Action & Missing in Action | Wounded | Total |
|---|---|---|---|
| **Fighter Pilots** | **48.4%** | **3.9%** | **52.3%** |
| **Light Bomber Aircrew** | **23.8%** | **11.2%** | **35.0%** |
| **Heavy Bomber Aircrew** | **71.2%** | **17.5%** | **88.7%** |

**Table 1: 8th Air Force USAAF, Casualty Rates January–June 1944**[18]

To lose over 50 per cent of your fighter pilots, 35 per cent of your light bomber crews, and more than 88 per cent of your heavy bomber crews in just six months is to be very hard hit. If it was not a defeat, it was – to borrow Wellington's comment – a near-run thing. The men being killed and wounded here were the cream of American youth.[19] The point is that those who survived and presumably reflected their dead comrades' opinions had some disturbing attitudes about the war.

The Combined Bomber Offensive against Germany had support at the highest political levels and was therefore legitimate. At the tactical level however feelings seem to have been different, though oddly it does not seem to have made much difference to the way they fought. This may reflect the fact that once the airmen were part of the campaign, they were on a path that was very difficult to step off. An air force at war is an organisation: it is not a 'community' in the civilian sense of the word. The relationship between the members is defined by the structure and purpose of the air force in which they serve. The individual's personal beliefs have minimal impact on the organisation, particularly if he is of low rank.

The cohesion the allied airmen had was based on the fact that they were facing a common enemy, and they had been indoctrinated with a common discipline. But, as Michael Walzer points out, their unity was an instilled reflex.[20] It was not intentional or premeditated. In war, disobedience is not only a challenge to that unity, it is also dangerous because the common cause on which the group is based is lost.

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18 Stouffer, *Studies in Social Psychology*, p 407 (Table 4).

19 *ibid*, p 325.

20 Michael Walzer, *Just and Unjust Wars*, Allen Lane, London, 1977, p 315.

The paradox that earlier I described as disturbing was that a significant proportion of American fighting men had overt sympathy for the Germans. How do you take such casualties, cause such damage, and then in the immediate aftermath of the conflict prefer your former enemy, who had committed crimes of staggering proportions, to some of your wartime allies?[21] Was the war you just fought legitimate, and what moral basis did you take into it?

I am not saying the Allied bomber crews or fighter pilots were deliberately being immoral in participating in the Combined Bomber Offensive. There were so many other issues associated with daily operations that few probably considered the ethical aspects of the war they were fighting. Very few would have had any training or education in moral issues, and they were not necessarily provided with a sympathetic support base. In one survey of US Army chaplains just under half felt that killing enemy soldiers was a righteous act and the rest regarded it as justifiable. Only seven per cent ascribed any moral content to the act of killing and none felt that the individual soldier had any moral responsibility in the matter – except to serve his country.[22]

I am saying that many philosophers believe that military discipline produces behaviour as an automatic response that is antithetical to the kinds of activities in which a moral life is rooted. There really is a distinct difference between *jus ad bellum* and *jus in bello*. Those who decide to go to war may have strong reasons for taking their country down that path, but it seems that those who actually do the fighting often have contrary views, or none at all. No wonder Einstein was puzzled. And it is highly likely that new war will be even more puzzling.

## FIGHTING WARS IN THE FUTURE

In new war, by which I mean wars at the end of the 20th century, what we are seeing is a decline in the legitimacy of the domestic political process in many nations with a corresponding rise in violence as the means of settling disputes. The places where this new form of warfare has been happening tend to be where a colonial or totalitarian regime has at some time earlier impressed itself on the local society. The main trouble spots at present tend to be in the Balkans, nations in the former Soviet Union, and much of sub-Saharan Africa.

Some of the current literature suggests that when the oppressive regime collapsed and the people stopped being subject to an imposed, false form of society, the original primordial tensions, which had existed before any external domination, came back into play. This claim is most probably a form of excuse sought by some of the participants because most of the evidence points to something a little different.

The state as an entity has been undergoing a metamorphosis throughout the world but – in the countries where wars have broken out recently – the institutions, which in a stable nation-state would allow people to identify with something larger than their

21 Stouffer, *Studies in Social Psychology*, pp 576–8.

22 Bourke, *An Intimate History of Killing*, p 300.

ethnic allegiances, have collapsed, and all that individuals feel they can do is to ally with someone 'like them'. So we are seeing the politics of identity rather than ideology. In this context the labels are what you are born with, not what you espouse. A Catholic youth in Belfast will always be Catholic no matter how hard he might try to be something else. And a Turk whose family has been living in Germany for two generations will never be a German.

In the disintegration of states the distinctions between public and private, between military and civil, and between domestic and international have been blurred to such an extent that there is some difficulty now in differentiating between war and peace.

The issues which military professionals will face in war against ethnic nationalists – or in trying to separate warring ethnic factions – all coalesce around what Hans Magnus Enzensberger calls 'autism'.[23] This is the pathology of groups who are convinced they are victims and believe so strongly in their myths of violence that they cannot accept any input whatsoever from people outside their clan. For these people listening to other opinion is worthless because in their minds no-one but their own people can understand them. They will do evil because – as Neil J. Smelser pointed out in his study of the determinants of destructive behaviour – 'one of the most profound aspects of evil is that he who does the evil is typically convinced that evil is about to be done to him'.[24]

Another issue, which Freud raised in an essay written in 1917 called the Taboo of Virginity, is that it is precisely the minor differences in people – who are otherwise alike – that form the basis of feelings of strangeness and hostility between them.[25] The English poet G K Chesterton expressed this attitude rather neatly when he wrote about:

> The villas and the chapels where
> I learned with little labour
> The way to love my fellow man
> And hate my next door neighbour[26]

This hatred, which is so difficult to understand, poses a problem for the people who may be fighting them – to stop them fighting – and it has significant implications for the patience and ethics of those people.

New wars will, most probably, be based on a crude combination of guerilla warfare and counterinsurgency. This means that they will be brutal, and the civilian population will bear the brunt. Following the tried and tested counterinsurgency methods, the participants will try to destabilise the opponents' civilian support base and spread fear, mistrust and hatred. A figure that demonstrates their "success" is that in 1900 the ratio of civilians to military personnel killed in war was 1:8 while the ratio in 1990 was 8:1.[27]

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23 Michael Ignatieff, *The Warrior's Honor*, Vintage, London, 1999, p 60.
24 Bourke, *An Intimate History of Killing*, pp 227–8.
25 Ignatieff, *The Warrior's Honor*, p 48.
26 *ibid*, p 55.
27 Mary Kaldor, *New and Old Wars*, Polity Press, London, 1999, p 8.

Violence has become increasingly privatised. When groups in society cannot live together nor arrive at collective decisions that are what could be termed 'resilient to disagreement', they turn to criminal elements, organised crime or paramilitary groups, to achieve their aims.

This suggests that there will be mass killings, programmed rape, disenfranchisement, and forcible expulsion. Behaviour that has now been forbidden such as atrocities against non-combatants, sieges, and the destruction of historic monuments [such as Dubrovnic] are central planks of the new warfare.

Anecdotal evidence suggests that in the early 1990s Serb artillery in Bosnia could be bought, so you could have your own personal artillery barrage delivered to the coordinates you selected – no questions asked. The weight of the barrage depended on how much you were prepared to pay.

## PROBLEMS FOR THE PROFESSION OF ARMS

All of this presents problems for the profession of arms. Let me just concentrate on ethical issues.

We will have been sent to a particular war zone because our governments cannot accept the situation there. This may be in spite of the fact that there are diasporas in our country who ardently support those whom we will oppose in the field. In short, we have become – to use Michael Ignatieff's elegant phase – the people who make the misery of strangers their business.[28] This is a whole new concept of altruism for military professionals.

Our involvement implies that we subscribe to humane civic values, which will brand us as interfering Universalists in the eyes of our opponents. They will hate us on principle because we are foreigners who could not possibly understand their beliefs. In fact both sides may loathe us because we will appear to be imposing our will in a situation where none of the possible results will be acceptable to any of the parties.

Professor Dru Gladney[29] posits that our arrival could actually drive the factions into an uneasy alliance. His theory, which is based on events since the Zulu wars at the end of the 19th century suggests that two sides may fight but come together to try and drive off a larger interloper if he threatens their mutual interests. This can be expanded further so that the two original warring parties will join their mutual enemy if an even larger force threatens their interests.[30] I see us as the fourth group here so that we would probably go into a situation where everyone's hand is raised against us.

The question we have to ask is 'what is our proposed end-state?' The failure to define one resulted in the deaths of around 250 US Marines and a similar number of French

28 Ignatieff, *The Warrior's Honor*, p 5.

29 Professor Dru C. Gladney is Associate Professor of Asian Studies at the University of Hawaii and Dean of Academic Studies at the Asia-Pacific Center for Security Studies.

30 Private discussions at Asia-Pacific Center for Security Studies, Honolulu, October 1996.

troops in Beirut in 1983. At the other end of the spectrum the UN has been in Cyprus for over 40 years and it is difficult to see the end there.

This attitude could cause a political backlash at home and we might be given rules of engagement that minimise the risks we could face. And this in turn will impact on the ethical base from which we operate. Are we prepared to defend those whom we have been sent to protect to the maximum extent possible – even if this is hazardous – and therefore politically difficult? This would cause us to review our concept of personal commitment.

It is logical that we should ensure that our forces are exposed to the least possible harm. However, the idea that no risks should be taken – that our own force protection is more important than the defence of those we seek to help – flies in the face of the concept of altruism, which is the cornerstone of the military profession.

In the aftermath of the Cold War virtually every Western nation's armed forces suffered from the so-called peace dividend. This has raised a number of questions about the role of armed forces in the 21st century. Is new warfare going to be the prime role – and what sort of force mix will be required to undertake the task? And – most importantly – will training for this role as the major task provide armed services with the ability to defend their respective nations if an old-style war has to be fought? There seems to be two skill sets here – can the people we currently have in conventional military organisations do them both?

These seem to be organisational questions but they actually do have a vital link to the ethics of armed forces. This has been shown by some of the issues raised in Graham Cheeseman's recent work on the Canadian Armed Forces,[31] though the problem is not new. If the people we have inducted into our armed services do not do perform tasks that have a measure of recognition for their value to society, then some of our troops will come to feel 'miserably insignificant' and this could lead to unethical behaviour.

Our reason for going to war (*jus ad bellum*) will ensure that there is no concept of vengeance or retribution against the people we will confront. This does not mean that it will easy to remain emotionally uninvolved given that both of the opposing sides could have deliberately committed terrible acts as a matter of policy before our involvement in the dispute. If they have done this it makes matters worse. On what basis do you decide who and what to defend?

Whatever the situation, when it comes to *jus in bello* we have to fight with due regard to the use of minimal force, proportionality, discrimination, and the expectation that our mission has a reasonable chance of success. At the same time we must only use force as a last resort.

This could play into the hands of opponents who would probably be very keen to see us leave so that they could continue their plan to dominate their areas of interest. They would thus use maximum indiscriminate force with tactics that create fear and loathing at the first opportunity. They would also realise that if they can inflict a few nasty

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31 Graham Cheeseman, *Keeping Peace: Canadian Defence and Security after the Cold War*, University of New South Wales, Canberra, 2000.

casualties on us in a way that attracts media attention – the 17 US Rangers in Mogadishu in October 1993 come to mind – then they could have a significant chance of success. Their aim would be to make us increase the protection we afford our own forces to the detriment of our task of defending those we have come to protect. Our troops might respond with lethal force that could harm innocents as well as the opposing forces. This would damage our reputation and destroy our sense of professional accomplishment. It would affect our morale adversely and in the final analysis we would want to leave – with a bitter taste in our mouths.

So where does that lead us? A summary might be that Freud told us over 75 years ago that we needed to investigate the relationship between might and right. He also told us that violence appears to be scarcely avoidable, and while human beings have a whole range of reasons for going to war, a lust for cruelty and destruction are certainly among them. Might appears to have come back with a vengeance.

In their correspondence in 1932 Freud told Einstein that he hated war, which must have made his belief that it was inevitable very bitter. His hatred stemmed from 'the conviction that:

- everyone has a right to their own life,
- war puts an end to human lives that are full of hope,
- it brings men into humiliating situations,
- it compels them against their will to murder other men, and
- it destroys precious material objects that have been produced by the labours of humanity'.[32]

Those are consequences. It seems to me that we should be looking at the causes and I believe that we really do need to understand the causes of war if we are to avoid – as far as possible – those consequences that Freud hated so much. What we do not understand is why people who are so alike can hate each other so much.

If the attitude that Brigadier Bidwell espouses about 'not wanting to hurt your enemy too much' is correct, then all the wars we fight in the future will have an ambiguity. We will have to abide by the laws of war that our society accepts but we will want to – indeed we **have** to – destroy the opposition's capability to fight and to impose our will on them.

The people we will be fighting will probably have committed acts that turn the stomach. How do we fight against people who have behaved abominably, abide by the laws of war ourselves, and win without descending to their level? How do we retain our patience so that we use minimal force against an opposition whose reasons for going to war are so specious? How do we convince our political masters that we must be left to do the work without too much interference in battlefield issues?

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32 Freud, *The Standard Edition of the Complete Psychological Works*, p 213.

Do we adopt the former US Secretary of the Navy James Webb's view that armed services should set their own standards according to their professional ethos? They should then tell their respective governments to chose between having them do the things they have to do in their own way – or disband them.[33]

Webb is a former US Marine officer who can be a bit *semper fi*, but he raises some issues about the point of military professionalism that I raised earlier. There has to be mutual trust so that civilians will feel they can allow their armed forces to be the major player.

Is the new form of warfare really war as we understand it, or are we going to be just glorified policemen in any future conflict? If we are to become 'the people who make the misery of strangers their business' we will need to be careful that we do not end up in a constabulary role that has little respect in our parent nations where compassion fatigue is now tangible.

If our task seems little different from that undertaken by a person whom my grandfather would have called 'a slip of a girl' who is clad in blue jeans and gets stuck into the warlords on behalf of a powerful non-government organisation without any weapons or threats of force, then questions will be asked about why we do things the way we do and why we are so expensive.

If the tasks we do undertake are poorly valued by our parent societies then the sense of professionalism, which includes ethics, will not exist and we will be an armed group without a sense of purpose. The consequences of that are all bad.

Fortunately we have servicemen and women who are better educated than any previous generation. They will be more thoughtful about how we will all behave in any conflict. They will also ask the hard questions about the reasons for doing what we are doing. We need to make sure those reasons are not only legitimate but also worthy of our nation's respect. We should then have the courage to answer those questions as clearly as possible, even when the answers are not particularly pleasant.

We need to study war much more deeply. It has so many facets – legal, moral, ethical, anthropological, historical, technological, economic, and military – that it is a lifetime's work. We should also avoid the temptation to say war is a thing of the past. Perhaps the realists' main task in the future is to disabuse us of this idea.

It is – as Freud noted – a continuing problem for all of us. We cannot wish it away and we cannot legislate it away, because interests will always take precedence over scruple. Only by knowing its inner workings can we try to reduce the awful consequences.

One aspect we do need to reconsider is the paradox of discipline. There is no doubt that we need some form for a wide range of reasons – not least for the fact that it will mark the difference between us and the people we will fight.

What I would like to leave you with is the idea that a deeply considered form of discipline might allow us to construct a new set of ethics for our role as military

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33 'Rules of Engagement', Interview with James Webb in *Proceedings*, April 2000, US Naval Institute.

professionals that gets away for the reflexive and moves to the thoughtful. This may help us to survive as a profession within a civilised society in the 21st century where there will be no easy choices.

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## *DISCUSSION*

*Flight Lieutenant Chris Middleton (RAAF):* I was interested in the map you put up during your presentation showing the conflicts in sub-Saharan Africa. On the question of ethics and the emergence of the fact that government and other non-government organisation are unable to solve those problems, I would be interested in your view on the emergence of private military organisations, such as Executive Outcomes and Sandline, and what your view might be on those in the future.

*Wing Commander MacFarling:* I think if you look back at mercenaries such as Sandline, they have been with us for about six centuries in the Western world. Certainly if you look at Sir John Hawkwood and the White Company in Lombardy in 1380, the contract he had with Padua, I think it was, is almost the same as the one Executive Outcomes had with Sierra Leone in the 1990s. The thing you have to realise is these guys are only there for money, there is no altruism, there is nothing that stops them from being extremely efficient and effective, but without a shred of ethics or morality – they will just go and kill people. I think the arrival of mercenaries in the late 20th century as a new player on the block for either government or non-state actors is actually a blot on civilisation.

*Major Sidek bin Abdul Majid (RMAF):* To quote a 1995 RAN paper on preparing for conflict in the information age 'the implication of information revolution are both pervasive and profound'. We have heard this morning from General Deptula, expanded from what we have seen on CNN, how common strategic interests have contributed to coalition operation and success. Reviewing most strategic objectives and being within the ethics of war, it has always been against the regime not the people. My question is with the excellent and accurate target review capability and in the context of *jus in bello* – just your thoughts – how does the Coalition justify the bombing of public infrastructure and non-designated military targets for its strategic worth?

*Wing Commander MacFarling:* Good one. This is one of the things I raised and one of the reasons I am concerned about it. You actually have to make sure that your targeting is precise and clear. And that's one of the reasons why you shouldn't just have lawyers as advisers, you should actually have anthropologists and historians – people who are aware of what the consequences are. You should not have an economist or just an intelligence officer telling you what the vital places are. In future, we actually might find ourselves really hard-pressed by international lawyers saying that a particular campaign that didn't attack the optimum targets actually is illegal and immoral, and you might find war crimes prosecutions against the targeting staff. That

could happen in the next fifty years I would suggest. So what it comes down to is Colonel Phillip Meilinger's comment about air power being precision warfare, and precision warfare is all about targeting, and targeting is all about intelligence. You have to get the targeting and intelligence really down pat to ensure that we never get any collateral damage that would put us in the way of being condemned under international law. That's a very hard thing for us to do, and it brings in a whole new set of problems for the military professional, and if you're not very careful you can actually back off doing anything – you become paralysed – and that's a worry as well. There are whole bunches of conundrums, that's why I say we need to study war and understand it better.

*Mr Greg Ferguson (Australian Defence Magazine):* Talking about legal redress against people who designate targets or people who take armed force into a certain situation, are we not heading to a situation perhaps where the good guys are more liable for punishment for trying to help out than the bad guys who started it in the first place?

*Wing Commander MacFarling:* Yes, I think that is very likely and this is one of the issues of legitimacy, politics, and what you want to achieve. I actually believe, having studied quite a lot about other cultures for this paper, that the Japanese way of war has much to commend it. This is where you actually go and get the bad guy and you don't worry about targeting anything else. Your sole target is the bad guy because he is the most appropriate target. He caused the problem, and I think that attacking him is the sort of thing we need to look at. If we are not careful we are going to get into this problem of having us, as the good guys, painted irrevocably as the bad guys simply because we can be seen to have done things that have failed – hit the wrong target for example – however hard we tried. At the same time, the things our enemy has done may not be able to be proved in law. Today, we have the paradox of the two Bosnian Serb leaders avoiding arrest by a variety of means and there is chance of them getting off scot-free at their trials – if it ever gets to that. And some 'poor sucker' who's been a targeting officer might actually go to jail, and that would be a real problem.

*Air Chief Marshal Sir Anthony Bagnall (RAF):* I would hate there to be mis-illusion here. Certainly in my own nation, there will never be a 'poor sucker' to use your words. Targeting of delicate targets is controlled at the highest level with consultation with politicians and with legal advisers and all that. The dilemma you face is that there might be an electrical supply house that is keeping the radars going and at the same time keeping the hospitals going. Today, we are well aware of those issues and take due note. But the man in the cockpit, the targeteer, he will have top cover for the difficult targets.

*Mr David Wade:* You alluded to other ethical bases – you mentioned Japanese construct and so on – why do we need to phrase our ethical arguments only around the European culture?

*Wing Commander MacFarling:* I don't think you need to phrase anything around any single culture. I think it is a matter of civilisation where there are certain things that are absolute, but I think what we do need in war, and in war studies, is to make sure that we understand all the ethical positions based on all of the major religions, and minor ones as far as it is possible to do so, so that we can understand how we should fight.

We could even develop a syncretic form of ethics if there is a way of doing it. All I'm concerned with is making sure we get the ethical base of the military profession as good as we can. The Air Chief Marshal's comment gives me great heart. I wonder, Sir, if I could ask you back – does your staff actually work to an ethical basis, is it overt or is it just assumed and part of your normal system?

*Air Chief Marshal Sir Anthony Bagnall (RAF):* I don't want to hijack the debate – this is the sort of debate that we would be having in the Staff Colleges – but at the time when we are discussing real targets, yes, one obviously takes account of the ethical side, the morality, but perhaps fundamentally the impact on the people on the nation you are trying to relieve the suffering in.

*Air Marshal Ray Funnell (RAAF Ret'd):* Thank you, I enjoyed your presentation, and I just wondered in your background reading in putting this together if you came across that article last year in Foreign Affairs, immediately after the Kosovo conflict, by Edward Lutwark called 'Give War a Chance'. Now Edward is a commentator and a controversialist, and I don't know if it was he who said it, but he certainly was capable of saying it, that the solution to the problem of the Balkans was to seal the borders and given them all the weapons they need. He raises a real ethical issue in that particular article in which he said that we, particularly those of us in the advanced nations who have highly developed senses of ethics, intrude too early into the age-old practice of people fighting over a cause and fighting their way through it. That if we only let them fight to the finish, we'd all be better off. I just wondered if you came across that, and his point of view, and what your response to it was.

*Wing Commander MacFarling:* I hadn't seen it – I regret that gap in my knowledge. I can understand the realist when he says that's not a bad idea, but the civilised half of my brain says it is terrible. As far as I'm concerned, we have become the people who 'make the misery of others our business' and I think for good or bad, for our own parent societies we need to be part of the action to see if we can stop the innocents from suffering as so many do. Perhaps that's 'bleeding heart' liberal stuff, I don't know, but I prefer to be that way, simply so I can sleep at night.

# OBSERVATIONS ON THE CONFERENCE

## AIR VICE-MARSHAL ALAN TITHERIDGE

Air Marshal McCormack, in his introduction, mentioned General Baker's reference to the fact that the introduction of air forces gave rise to the requirement for joint operations, and that was an issue supported when Colonel Phil Meilinger talked about the fact that air power is essentially a joint term – I think they were two very good scene setters. Dr Gerard Henderson talked about a paradigm change. That we now see that it is not just ground forces that can possibly achieve the objectives of a particular campaign, and I am sure that is an issue that has been the subject for vigorous debate, and will continue to be for some time. But it is also a point that was reinforced by Dr Alan Stephens in his presentation this afternoon. Undoubtedly that view is influenced by the ease of modern communications, the threat of body bags, which was mentioned yesterday. In short, the sort of low or no risk warfare referred to by Dr Stephens, again, in his presentation this afternoon.

Dr Gerard Henderson also talked about the changing nature of warfare. He spoke about the change in scope from a land dominant World War I through World War II, Vietnam and the Gulf, to an air dominant Kosovo campaign. Dr Alan Stephens mentioned this afternoon that this is a view that has been supported by the International Institute of Strategic Studies. Is this a trend, or is it just a cycle? I am sure that this another debate that is about to take place, certainly in this country and further afield. Dr Henderson also mentioned the trend towards the necessity of coalitions as a key to gaining democratic acceptance for a particular operation or contingency, and I think this was well underscored by Brigadier General Dave Deptula this morning in his presentation on Operation NORTHERN WATCH. He talked about the complex nature of staff operations – his five football teams analogy – the need to be able to adapt, to be willing to adapt, and perhaps even to compromise on what your requirements for that particular operation are. He particularly reinforced the issue of trust at all levels, and that is something that came out in the discussions yesterday on several occasions. He talked about the need for agreed rules of engagement (ROE) – combined ROE– and he highlighted the need for joint training. I thought he captured in his presentation this morning, a lot of those issues that we need to address. It was reinforced again by Air Vice-Marshal Bob Treloar in discussing the Australian Theatre's role in the East Timor operation.

Colonel Phil Meilinger discussed the symbiotic nature of joint operations. Clearly he saw it, as I think many of us do, as a force multiplier, but it is obviously something we need to continue to work at, particularly in overcoming those barriers to joint operations – things like personalities, lack of trust, parochialism and so on. We saw the reinforcement of some doctrinal tenets of air power in joint operations – the issue of centralised command brought out by Colonel Phil Meilinger and the importance of decentralised execution highlighted by Brigadier Dave Deptula this morning. We saw the issue of the component method of command which was highlighted by Professor John Ballard in his reference yesterday to the Korean War.

We saw the crucial issue of air superiority and its importance, even now, and the fact that it is accepted as a given, and the fact that the expectations of this will remain so for the foreseeable future. I was particularly taken with Professor John Ballard's point about the importance of operational art, or operational manoeuvre, to joint operations and his reference to the fact that there was more or less a loss or knowledge of that following MacArthur's departure in Korea – the fact that it was probably de-emphasised during the nuclear dominant era of the 1950s and 60s. In fact, I think his thesis that 'jointery is an operational level issue', was quite an apt one and certainly came home to me. It was further brought home again by Air Vice-Marshal Bob Treloar this afternoon, when he was talking about the evolution and the structure of the Australian Theatre.

Dr Richard Hallion suggested that asymmetric warfare is not a modern trend and he rather cleverly gave us some illustrations of Assyrian chariots and Middle Age archers through to the modern day surface-to-air missiles, and some interesting statistics on the effectiveness of a certain SAM battery in North Vietnam. He stressed that air power had an important role to play in asymmetric warfare, and will continue to do so. He talked about the missiles of all kinds and their importance in all kinds of wars and also that was brought out again by Dr Alan Stephens this afternoon in talking about preparations for future command. We saw Brigadier Dave Deptula's reference to missiles with instant feedback; an interesting portend, I suspect, for the future.

Space was mentioned, as you would expect in any military style of conference and especially one devoted to air power and air operations, and I thought that Air Vice-Marshal Peter Nicholson highlighted the criticality of space very well while espousing what was probably a realistic vision of space for Australia.

If we were feeling at all comfortable as military professionals with the role of the media, I think Dr Stephen Badsey set us back in our seats and gave us a lot of food for thought on our relationships with the media, and the fact that the issue really is one of understanding it. Air Commodore John Blackburn also took us well outside our comfort zone, I believe, in talking about our future people challenge, and the need to think about capability in a much broader context than we have done in the past.

Of course, we can't discuss military power and joint operations without a discussion on command. What are the attributes required of a modern joint force commander? Have those requirements changed? Is it sufficient, as we heard earlier today, just to have a capable air component commander when you have an air predominant operation. Dr Alan Stephens gave us a lot of food for thought there. Underscoring all this, of course, is the ethical dimension just discussed by Wing Commander Ian MacFarling in his very interesting presentation.

Well so much for the themes, I thought I would finish up by drawing out a few issues that I thought were relevant to a small force like the ADF, and perhaps other regional forces. I think the scene here was set very well by the Minister in his opening comments. Australia has some very, very difficult choices ahead in the way the ADF is structured. The White Paper is going to be an interesting process over the next few months. The debate is alive and well – the issue of hi-tech forces on one hand and land predominant forces for peacekeeping operations on the other, and where the balance should be, particularly when you are talking about the pretty rigorous competition for

the national dollar. The issue of the unpredictable strategic environment, particularly in the Asia-Pacific region. The issues of a small population, where the work force is a limited resource and, therefore, we come back to the issue of body bags, and the acceptability or otherwise of that. The importance, or the growing importance, of coalition operations, if you are going to get public support for these sorts of contingencies, and what that means for the ADF's interoperability with the forces we are likely to fight alongside. That's got to be put in the same context of our traditional support for the United Nations, which are generally coalition operations. We certainly need to be able to punch above our weight as a small nation, particularly as Dr Gerard Henderson brought out, I believe, that we are not part of a larger group as many other nations are, and I think here we see the importance of joint operations as a force multiplier.

There was an interesting issue that arose in the question time after Professor John Ballard's presentation. That was the reference to the appointment of a CDF rather than a Chairman of a joint staff, and I certainly believe myself that that appointment facilitates the move to joint operations in a much more directive sense than necessarily might occur in another environment. I liked Colonel Phil Meilinger's point that single Service expertise should provide the base of joint operations. I think we all agree with that and it was certainly reinforced by Air Vice-Marshal Bob Treloar when he spoke about the structure of Australian Theatre. The importance of joint planning was stressed and it reinforced, I believe, our Theatre construct. Finally, Air Vice-Marshal Peter Nicholson provided an outline on the Australian approach to space and the particular challenges that we have to stay in the game to some extent, or to the extent that our resources allow. We certainly are clearly interested in communications and remote sensing navigation but where do we go from here, and what are the long-term enablers?

So, all in all, I thought a most successful symposium. It certainly gave me enormous food for thought and, just in the discussions in morning teas, afternoon teas and lunches, I am getting the same drift from a lot of other people to whom I have spoken. I hope you all agree, and I trust that it did exactly the same for you as it did for me. That completes my overview of the conference. I would now like to hand over to Chief of Air Force, Air Marshal McCormack to formally close the Conference.

# CLOSURE

## AIR MARSHAL ERROL MCCORMACK

Well ladies and gentlemen, it only remains for me to close the conference. First of all I would like to go through a few thank you's. The Conference was put together by a team of people from the Air Power Studies Centre, now known as the Aerospace Centre, under the guidance of Group Captain Al Crowe and Doctor Al Stephens. I am talking here of Wing Commander Keith Brent, Mrs Sandra Di Guglielmo, Warrant Officer Mike Hinton, Mrs Roz Bourke and Mr Phil Hastie. They are the people that put the whole thing together and made it run so smoothly, and I would like to give them a hand from everybody for the great support they have given us.

We could not have done it without the sponsors, of course. Our major sponsor, BAE Systems, put a lot of their treasure into the Conference and I am very glad that they did. Rolls Royce was another significant sponsor, and Qantas provided a lot of transport support for our guests. Minor sponsors included the Defence Force Credit Union and Defence Health.

Of course, we couldn't have done it without the moderators; Air Commodores Julie Hammer, Norm Grey, Jim Cole and Ken Birrer did a great job. Thank you very much. You've kept us on time which is a very important factor when you're trying to run a tight program and I think it was a great job. Of course no conference is any good without the contributors and it's not just the one hour they spend on stage. The work that was put into those presentations, except Al Titheridge's of course - he only had a few minutes to fix his up - was enormous and I must say contributed to the overall conference exceptionally well. I thank you very much and of course I also thank you, the audience. The conference would have been nothing without an audience and the interaction has been fantastic. In fact I'm sure we could have gone overtime in a lot of these areas if we'd had the chance.

Finally let me go back to the beginning. I quoted General Baker, Colonel John Baker then, who said it has been air alone that has given rise to the inexorable trend towards joint operations. There are still some people who believe the solution lies in dividing the Air Force between the Army and the Navy, and thus delete the problems of jointery. That is one solution – I don't happen to agree, not only because maritime and land are going to be intertwined – I think the solution lies in the conduct of seamless joint operations and that of course is what the whole conference was all about.

Thank you all. I think we've met the requirements and I would like to formally close the Conference. Thank you very much.

# INDEX

The RAAF's biennial Air Power Conference is now established as the foremost event of its type in the region and enjoys an enviable international reputation. The 2000 Air Power Conference was held in Canberra over the period 8-9 May 2000. More than 1,000 delegates attended the conference, including many overseas air force chiefs and senior representatives.

The theme of the 2000 Conference was Air Power and Joint Forces. When we consider the application of combat power today, we invariably do so within a joint, as opposed to a single or even two-Service, context. But while the merit of joint action may be self-evident, in practice it raises many complex challenges: command, organisation, cooperation, planning, force balance, threat prosecution, and so on.

The objective of the 2000 Air Power Conference was to discuss and analyse those kinds of challenges. This book records the proceedings of the event. Topics addressed include globalisation, the evolution of the joint force, air power and asymmetric threats, the military use of space, air exclusion zones, the role of the media, command and leadership, and ethics and the profession of arms.

The contributors are The Hon John Moore, Air Marshal Errol McCormack, Air Vice-Marshal Peter Nicholson, Air Vice-Marshal Alan Titheridge, Air Vice-Marshal Bob Treloar, Air Commodore John Blackburn, Brigadier General David A. Deptula, Colonel Phillip S. Meilinger, Wing Commander Ian MacFarling, Professor John Ballard, Dr Stephen Badsey, Dr Richard Hallion, Dr Gerard Henderson and Dr Alan Stephens.