



# **PROCEEDINGS OF THE 2014 RAAF AIR POWER CONFERENCE A CENTURY OF MILITARY AVIATION 1914-2014**

**NATIONAL CONVENTION CENTRE, CANBERRA  
12-13 March 2014**

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# THE AIR POWER DEVELOPMENT CENTRE

The Air Power Development Centre (APDC) was established by the Royal Australian Air Force in August 1989 at the direction of the then Chief of the Air Staff. Originally known as the Air Power Studies Centre, it was renamed the Aerospace Centre in 2000 and then became the Air Power Development Centre in 2004.

Its function is to promote a greater understanding of the proper application of air and space power within the Australian Defence Force and in the wider community. This is being achieved through a variety of methods, including development and revision of indigenous doctrine, the incorporation of that doctrine into all levels of RAAF training, and increasing the level of air and space power awareness across the broadest possible spectrum.

Over the years the APDC has evolved into an agency that provides subject matter expertise for air and space power education, and has a well-developed publication program. The Office of Air Force History (formerly known as the RAAF Historical Section) was amalgamated with the APDC in 1997.

Comment on these proceedings or inquiry on any other air power-related topic is welcome and should be forwarded to:

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## PREFACE

The papers and PowerPoint images contained herein are essentially as they were presented at the conference, with only minor changes to achieve some consistency in layout, spelling and terminology. The transcripts of the panel discussions that followed the presentations have been edited for relevance, clarity and brevity.

Copies of the edited papers and transcripts were sent to the authors for comment and endorsement before publication.

Keith Brent  
Editor, Air Power Development Centre  
Canberra

November 2014

# CONTENTS

<i>The Air Power Development Centre</i> .....	iii
<i>Preface</i> .....	iv
<i>Notes on Contributors</i> .....	vii
<i>Abbreviations and Acronyms</i> .....	xxiii
ACKNOWLEDGEMENT OF COUNTRY	
<i>Group Captain Lisa Jackson-Pulver</i> .....	1
OPENING ADDRESS	
<i>Air Marshal Geoff Brown</i> .....	3
KEYNOTE ADDRESS	
<i>The Honourable Dr Brendan Nelson</i> .....	5
AUSTRALIA AT WAR	
<i>Professor Geoffrey Blainey</i> .....	13
THE ADVENT OF AIR POWER 1914–1938: A REVOLUTION IN MILITARY AFFAIRS?	
<i>Professor John McCarthy</i> .....	27
AIR WAR IN EUROPE: WORLD WAR II	
<i>Mr Sebastian Cox</i> .....	37
AIR WAR IN THE PACIFIC: WORLD WAR II	
<i>Dr Richard R Muller</i> .....	53
APPLYING PRESSURE WITH BALANCE: AIR POWER IN THE KOREAN WAR	
<i>Professor Robert O'Neill</i> .....	65
THE LIMITS OF AIR POWER OR THE LIMITS OF STRATEGY: THE AIR WARS IN VIETNAM AND THEIR LEGACIES	
<i>Dr Mark Clodfelter</i> .....	75
AIR CAMPAIGNING	
<i>Colonel John A Warden III (Retd)</i> .....	95
THE RISE, FALL AND RISE OF SOVIET/RUSSIAN AIR POWER	
<i>Dr Sanu Kainikara</i> .....	115

IRREGULAR WARFARE: THE REGULAR IN THE IRREGULAR	
<i>Dr Christina JM Goulter</i> .....	145
THE BALKAN AIR WAR(S): AIR POWER AS A WEAPON OF FIRST CHOICE	
<i>Dr Peter Gray</i> .....	171
AIR POWER IN AFGHANISTAN – THE EARLY YEARS	
<i>Dr Benjamin S Lambeth</i> .....	187
THE 2003 GULF WAR – UNITED STATES	
<i>General T Michael ‘Buzz’ Moseley (Retd)</i> .....	201
THE 2003 GULF WAR – UNITED KINGDOM	
<i>Air Chief Marshal Sir Glenn Torpy (Retd)</i> .....	219
THE 2003 GULF WAR – AUSTRALIA	
<i>Air Vice-Marshal Mel Hupfeld</i> .....	235
THE 2003 GULF WAR – PANEL DISCUSSION	
<i>General T Michael ‘Buzz’ Moseley (Retd)</i>	
<i>Air Chief Marshal Sir Glenn Torpy (Retd)</i>	
<i>Air Vice-Marshal Mel Hupfeld</i> .....	239
FRIENDS AND ALLIES: A CENTURY OF ENDURING PARTNERSHIPS	
<i>Air Chief Marshal Sir Andrew Pulford</i> .....	243
AIR POWER IN AUSTRALIA’S FUTURE STRATEGY	
<i>Mr Peter Jennings</i> .....	255
CLOSING ADDRESS	
<i>Air Vice-Marshal Gavin Davies</i> .....	265

# NOTES ON CONTRIBUTORS

## **GROUP CAPTAIN LISA JACKSON-PULVER, AM**

Group Captain Lisa Jackson-Pulver is a strong, influential woman who is dedicated to improving the lives of others. As the inaugural chair of Aboriginal Health at the UNSW, she is an internationally recognised scholar and expert on Aboriginal health and wellbeing, data and health statistics, epidemiology and education.

She is the Senior Indigenous Adviser to the Chief of Air Force and in 2013 was appointed as the founding Director of Aboriginal and Torres Strait Islander Affairs – Air Force. This role shapes the strategic direction for Air Force Indigenous Affairs.

Outside of Defence, Group Captain Jackson-Pulver is on the Australian Statistical Advisory Committee and is the Deputy Chair of the National Advisory Group for Aboriginal and Torres Strait Islander Health Information and Data. She is a Board Member of the Lowitja Institute and member of the Australian Medical Council.

In 2011, Group Captain Jackson-Pulver was made a Member of the Order of Australia for service to medical education and for her tireless work to create educational opportunities for Aboriginal and Torres Strait Islander people.

## **AIR MARSHAL GEOFF BROWN, AO**

Air Marshal Geoff Brown joined the RAAF in February 1980 after completing an engineering degree. He graduated from No 111 Pilot's Course in 1981 and was initially posted to No 12 Squadron at Amberley to fly Chinooks. After three years at 12 Squadron he was posted to No 2 Flying Training School, Pearce, and spent 18 months as a Flying Instructor before being posted to Central Flying School (CFS), East Sale, in 1986. While at CFS, he was a member of the Roulettes from 1987 to 1989. He led the last Macchi team before they transitioned to the PC-9/A.

In 1990, Air Marshal Brown was posted to Williamstown for a Hornet conversion and then completed a short tour at No 77 Squadron. On promotion to Squadron Leader in 1991, he was posted to No 75 Squadron, Tindal, as a Flight Commander.

In 1993, Air Marshal Brown was then posted to No 77 Squadron as Executive Officer. He completed RAAF Staff College in 1995 and was subsequently posted to Headquarters Air Command as Staff Officer Operational Evaluation.

From 1997 to 2000, Air Marshal Brown commanded No 3 Squadron. He then completed F111 conversion and assumed the position of Officer Commanding

No 82 Wing in December 2000. In 2003 he commanded all F/A-18 and C-130 operations in Operation *Iraqi Freedom* and was appointed a Member of the Order of Australia (AM) and awarded a Legion of Merit for his service in the operation. He was Officer Commanding Airborne Early Warning and Control Systems Program Office from June 2003 until December 2004, and spent 2005 at the Centre for Defence and Strategic Studies. He then commanded Air Combat Group throughout 2006. From January 2007 until June 2008 he was Director General Capability Planning in Air Force Headquarters. Air Marshal Brown was the Deputy Chief of Air Force from 30 June 2008 to 3 July 2011. He was appointed Chief of Air Force from 4 July 2011. He was appointed as an Officer of the Order of Australia (AO) in the 2012 Australia Day Honours List.

Air Marshal Brown has over 5000 hours in military aircraft.

He lives in Canberra with his wife Amanda and his two sons, Ryan and Jake. His sporting interests are gliding and motorsports.

### **THE HONOURABLE DR BRENDAN NELSON**

Dr Brendan Nelson commenced as Director of the Australian War Memorial on 17 December 2012. Prior to this, he was the Australian Ambassador to Belgium, Luxembourg, the European Union and NATO (2009–12). Apart from overseeing a major transformation in Australia's relationships with the European Union and NATO, Dr Nelson forged deep links with the communities of Flanders, where almost 13 000 Australians lost their lives during World War I. He regularly made the trip from Brussels to the Ypres (Menin Gate) Memorial at Ieper, where the names of 6190 Australians who died in World War I and have no known grave are listed.

Born in Coburg, Victoria, in 1958, Dr Nelson studied at Flinders University, South Australia, where he graduated with a Bachelor of Medicine and Surgery. He worked as a medical practitioner in Hobart from 1985 to 1995. In 1993 he was elected unopposed as National President of the Australian Medical Association (AMA), becoming the youngest person ever to hold this position. He had previously served as National Vice President, and Tasmanian Branch President, of the AMA. During his time as National President, he campaigned on a wide range of social policy issues, including Aboriginal health and immunisation, and led the campaign against tobacco advertising and sponsorship of sport. He was also a relentless advocate for private health insurance. In 1995 Dr Nelson retired as President of the AMA following his preselection as the Liberal candidate for the Sydney seat of Bradfield.

On 2 March 1996 Dr Nelson was elected to the Federal Parliament of Australia. After the 2001 election, he was promoted from Parliamentary Secretary to



the Minister for Defence to Cabinet in the senior portfolio of Minister for Education, Science and Training, driving major reforms to universities and a focus on school standards and reporting. In 2006 he became Minister for Defence when troops were deployed to Iraq, Afghanistan, East Timor and the Solomon Islands. He oversaw major new investments in Defence including the decision to purchase 24 F/A-18F Super Hornets, three air warfare destroyers, two landing helicopter docks (LHDs), two additional battalions for the Australian Army and a multibillion dollar recruitment and retention package. In November 2007, Dr Nelson was elected leader of the Liberal Party of Australia, serving as Leader of the Opposition until September 2008. The following year he retired from federal politics before taking up his ambassadorial appointment.

In 1995 Dr Nelson was awarded the AMA's highest honour, the Gold Medal for 'Distinguished Service to Medicine and Humanity'. In recognition of his commitment to public health, he was awarded an Honorary Fellowship of the Royal Australasian College of Physicians, and in 2011 he received an Honorary Doctorate from Flinders University.

In addition to being Director of the Australian War Memorial, Dr Nelson is a Distinguished Visiting Fellow at the Australian National University (ANU), a member of the Chief Scientist's Advisory Council, a member of the Board of Presidents for the US National World War II Museum, Patron of Lifeline ACT, Patron of Trish Multiple Sclerosis Research Foundation, Patron of the Weary Dunlop Foundation, and a member of the Board of the Australian Children's Music Foundation.

Dr Nelson is married and has three adult children; his interests include Australian military history, music, motorcycles and tennis.

### **PROFESSOR GEOFFREY BLAINEY, AC**

Professor Geoffrey Blainey has a long and distinguished career in academic circles. For 20 years he was a professor of economic history and then Ernest Scott Professor of History at the University of Melbourne. He also held the chair of Australian Studies at Harvard University. In 1988 in New York, he received the International Britannica Award for excellence in the dissemination of knowledge for the benefit of humankind. A member of various Federal Government committees, he was Chairman of the Australia Council for four years and Chairman of the Australia-China Council for five years, and in 2001 was Chairman for the National Council for the Centenary of Federation. In the early 1980s, he was Visiting Professor of Australian Studies at Harvard University.

He is the author of many books, including *The Tyranny of Distance* and *The Causes of War*. Amongst his recent titles are *A Short History of the World* (2000), a

bestseller now issued in many editions and translations extending from Italian to Portuguese, and *A Short History of the 20th Century*, released in 2005.

Professor Blainey is a witty speaker with a warm, approachable manner which delights his audiences. His presentations draw on economic events and their effects on the future.

### **PROFESSOR JOHN MCCARTHY**

Professor John McCarthy graduated with First Class Honours in History and a University Medal from the University of Queensland. In 1968 he completed a Master of Arts research degree in history at the University of New South Wales. His PhD in Political Science was awarded by the Research School of Social Sciences in 1972. After teaching at the University of New South Wales, Kensington and the University of Wollongong, he joined the Faculty of Military Studies as a Lecturer in the Department of History in 1970.

Retiring from the School of History, University College, UNSW@ADFA as Associate Professor, he continued to conduct courses in Australian Defence and Foreign Policy, and in Air Power and National Strategy as a Visiting Fellow. In 2001 he joined the Air Power Development Centre as Deputy Director CAF Fellows and currently co-directs an Advanced Air Power Course from that centre.

He has published widely in the fields of Australian defence and foreign policy, Australian politics generally, and in aspects of air power theory and practice. His books include *Australia and Imperial Defence 1918–1939: A Study in Air and Sea Power*; *Australian War Strategy 1939–1945: A Documentary History* and a study of the Empire Air Training Scheme in World War II titled *A Last Call of Empire: Australian Aircrew, Britain, and The Empire Air Training Scheme 1939–1945*.

### **MR SEBASTIAN COX**

Sebastian Cox is the Head of the Air Historical Branch (RAF) in the UK Ministry of Defence and one of the three Co-Directors of the Royal Air Force Centre for Air Power Studies. He is an elected Trustee of the international Society for Military History and a member of the Editorial Boards of *The Journal of Military History* and the Royal Air Force *Air Power Review*. He is also a member of the British Commission for Military History and serves on the Committee of the Royal Air Force Historical Society and the Research and Education Board of the Royal Air Force Museum. He was the historical advisor to the recently opened Bomber Command Memorial and is a trustee of two charities.

He was educated at King Edward's School, Bath, and is a graduate of Warwick University (BA (Hons) History) and King's College London (MA (Hons) War Studies). He was curator of documents at the Royal Air Force Museum, Hendon, before joining the Air Historical Branch as a researcher in 1984, and then serving successively as a Historian and the Deputy Head before being appointed as Head of the Air Historical Branch in 1996. He is the first person to hold that post without having previous commissioned military service.

He has written widely on the history of the RAF and air power, and has edited two book series related to the field. He has also lectured on air power and related topics to military and civilian audiences on four continents, including military colleges in the UK, USA, Canada, Australia, France, Germany, Norway and Kuwait.

### **DR RICHARD R MULLER**

Dr Richard R Muller is Professor of Military History and Dean of Academics at the USAF School of Advanced Air and Space Studies (SAASS) at Maxwell Air Force Base, Alabama. He joined the SAASS faculty in June 2005. Prior to that, he spent 14 years on the faculty at the USAF Air Command and Staff College (ACSC). At ACSC, he served as course director, department chairman, and Dean of Education and Curriculum.

He is a military historian specialising in the history of air power and World War II. He is the author of *The German Air War in Russia; The Luftwaffe's Way of War 1911–1945* (with James S Corum); and *The Luftwaffe over Germany: Defense of the Reich* (with Donald L Caldwell), which received the Air Force Historical Foundation's 'Best Air Power History Book of 2008' prize, as well as many articles, book chapters and reviews. A native of New Jersey, Dr Muller received his BA in history (with honours) from Franklin and Marshall College, and his MA and PhD degrees in military history from The Ohio State University. He has held fellowship appointments at Yale University and the Smithsonian's National Air and Space Museum, and was named the Air Education and Training Command Civilian Educator of the Year for 2009. Dr Muller and his wife Cindy have a 14-year-old daughter, Lauren.

### **PROFESSOR ROBERT O'NEILL, AO**

Robert O'Neill has worked in the fields of international relations, history of war and strategic studies since 1961. A Duntroon graduate (1958), he was Head of the Strategic and Defence Studies Centre at the Australian National University (ANU), Canberra, 1971–82; Director of the International Institute for Strategic Studies (IISS), London, 1982–87; and Chichele Professor of the History of War, All Souls College, Oxford, 1987–2001. He served in the Australian Army 1955–68 and was mentioned in despatches for his work in Vietnam, 1966–67. He was Chairman of the Council of the IISS 1996–2001 and of the Trustees of the Imperial War Museum, 1997–2001. He wrote the official history of Australia's role in the Korean War, *Australia in the Korean War 1950–53*.

### **DR MARK CLODFELTER**

Dr Mark Clodfelter is a Professor of Military Strategy at the National War College in Washington, DC. A former US Air Force officer, he served in radar assignments in South Carolina and Korea during a 23-year Air Force career devoted largely to teaching. He twice taught history at the US Air Force Academy, and ultimately served as the Academy's director of military history. From 1991 to 1994, he taught at Air University's School of Advanced Air and Space Studies (SAASS) as one of the school's initial group of eight professors. He next became Professor of Aerospace Studies and Commander of the Air Force ROTC detachment at the University of North Carolina. He began teaching at the National War College in 1997, first in uniform, and since 2000 as a civilian professor.

Mark has published extensively on air power topics. He has won several writing awards, and many of his publications are used as readings in professional military education courses in the US and in NATO countries. He is the author of *The Limits of Air Power: The American Bombing of North Vietnam* (Free Press, 1989), which US Air Force Chief of Staff General Ronald Fogleman selected for the Chief's intermediate reading list in 1996. In 2007, the RAF Chief of the Air Staff, Air Chief Marshal Sir Glenn Torpy, placed the paperback edition of the book on his 'top ten' reading list. Mark is also the author of *Beneficial Bombing: The Progressive Foundations of American Air Power, 1917–1945* (University of Nebraska Press, January 2011), a book analysing how progressive ideals influenced the American approach to strategic bombing before and during World War II, and why progressive air power notions have endured to the present in the US Air Force. He has a BS in European History from the US Air Force Academy (1977), an MA in Military History from the University of Nebraska (1983), and a PhD in American History from the University of North Carolina at Chapel Hill (1987). Mark is a diehard fan of North Carolina basketball, Air Force Academy football and St. Louis Cardinals baseball.

### **COLONEL JOHN A WARDEN III (RETD)**

John A Warden III is the president of Venturist, Inc., the company he founded after retiring from the Air Force in 1995. His company helps corporations and organisations learn and execute the concepts of winning strategy. Venturist clients have included Texas Instruments, McDonald's, government agencies, and many others. His diverse background includes serving as the architect for the successful 1991 Gulf War *Desert Storm* air campaign, authoring the bestselling *The Air Campaign*, heading the Air Force's Air Command and Staff College, working as Special Assistant to the Vice President of the United States, commanding the 36th Tactical Fighter Wing (F-15s) in Germany, and flying in the Vietnam War (266 combat missions). His business strategy book, *Winning in Fast Time*, is available online and in selected book stores, as is *The Air Campaign*.

He has published numerous articles on planning, strategy, and aerospace power, has appeared on many television and radio shows, and has spoken to groups ranging from the American Bar Association to most of the US's intermediate and senior professional military education schools and to defence colleges in Australia, Singapore, Norway, Sweden, Denmark, Chile, Brazil and France. He was the 1989 winner of the Air Force Association's arts and letters Gill Robb Wilson Award.

John Warden graduated from the United States Air Force Academy in 1965, completed pilot training in 1966, earned a Master's degree from Texas Tech University in 1975, and graduated from the National War College in 1986. His military decorations include the Distinguished Service Medal, Defense Superior Service Medal, Legion of Merit, Distinguished Flying Cross, and Air Medal with ten oak leaf clusters. He has over 3000 hours of flying time.

### **DR SANU KAINIKARA**

Dr Sanu Kainikara is the Air Power Strategist at the Air Power Development Centre and also a Visiting Fellow at the University of New South Wales. He is the author of 11 books: *Papers on Air Power* (2007), *Pathways to Victory* (2007), *Red Air: Politics in Russian Air Power* (2007), *Australian Security in the Asian Century* (2008), *A Fresh Look at Air Power Doctrine* (2008), *Seven Perennial Challenges to Air Forces* (2009), *The Art of Air Power: Sun Tzu Revisited* (2009), *At the Critical Juncture* (2011), *Essays on Air Power* (2012), *The Bolt From the Blue* (2013), and *From Indus to Independence: Volume I* (2013). He has presented extensively in international forums and published numerous papers on national security, strategy and air power. He is a recipient of the RAAF Chief of Air Force's Commendation.

Dr Kainikara is a former fighter pilot of the Indian Air Force (IAF) who retired as a Wing Commander after 21 years of commissioned service. During his Service

career, he flew over 4000 hours on a number of modern fighter aircraft and held various command and staff appointments. He is a Qualified Flying Instructor, and a graduate of the IAF Fighter Weapons School, the National Defence Academy, the Defence Services Staff College, and the College of Air Warfare. He is a recipient of the IAF Chief of Air Staff Commendation and the Air Force Cross.

After retirement from active service, he worked for four years as the senior analyst, specialising in air power strategy, for a US Training Team in the Middle East. Prior to his current appointment he was the Deputy Director Wargaming and Strategic Doctrine in the Strategy Group of the Department of Defence. He has also taught Aerospace Engineering at the Royal Melbourne Institute of Technology University, Melbourne.

He has two Bachelors degrees, a Masters degree in Defence and Strategic Studies from the University of Madras and his PhD in International Politics was awarded by the University of Adelaide.

### **DR CHRISTINA GOULTER**

Dr Christina Goulter is a Senior Lecturer at King's College London, and teaches at the UK Defence Academy, where she is the Air Academic, Higher Command and Staff Course.

From 1994 to 1997, she was Associate Professor of Strategy at the US Naval War College, Newport, Rhode Island. She is a member of the Chief of the Air Staff's Air Power Workshop, and has been involved in the Operation *Telic* and Operation *Ellamy* 'lessons' processes. She is a Committee Member of the Royal Aeronautical Society Air Power Group, and is on the Advisory Boards of the RAF Centre for Air Power Studies and the USAF Research Institute. Her publications include works on air power history, including *A Forgotten Offensive: Royal Air Force Coastal Command's Anti-Shipping Campaign, 1940–1945*, and other publications on current aerospace subjects, intelligence, the Special Operations Executive in World War II, and counterinsurgency warfare. Her forthcoming book deals with British intervention in the second round of the Greek Civil War, with a particular focus on urban counterinsurgency. Her next book deals with the Anglo-Commonwealth and Greek campaign in 1941. She is co-author of a USAF/RAND study of Operation *Unified Protector/Ellamy* (RAND, 2014).

Christina is married to Alexander Zervoudakis, who is also a military historian and author of works on the French Indochina and Algerian conflicts.

### **DR PETER GRAY**

Dr Peter Gray retired from the Royal Air Force in June 2008, having reached the rank of Air Commodore. He took up the position of Senior Research Fellow in Air Power Studies at the University of Birmingham on 1 September 2008. Gray spent his early career as a navigator on the F-4 Phantom aircraft and, more recently, commanded No 101 Squadron flying VC10 K tanker aircraft. He has spent two staff tours in the personnel field followed by a lengthy sojourn in the Cabinet Office, several appointments in the Ministry of Defence and has served as Director of Defence Studies for the Royal Air Force. Gray is a graduate of the Higher Command and Staff Course and was assistant director on the 2001 program.

Dr Gray holds degrees from the Universities of Dundee, London, Cambridge and Birmingham (PhD). He is a Fellow of the Royal Aeronautical Society, the Royal Historical Society and of the Institute of Leadership and Management. His latest book, *The Leadership, Direction and Legitimacy of the RAF Bomber Offensive from Inception to 1945*, was published in June 2012.

### **DR BENJAMIN S LAMBETH**

Benjamin S Lambeth is a Senior Fellow with the Center for Strategic and Budgetary Assessments, a position he assumed in 2011 following a 37-year career at the RAND Corporation, where he remains an Adjunct Senior Research Associate. Before joining RAND in 1974, he served in the Office of National Estimates at the Central Intelligence Agency. Prior to that, he worked for the Center for Strategic and International Studies and the Institute for Defense Analyses.

A civil-rated pilot, Dr Lambeth has flown or flown in more than 40 different fighter, bomber, attack, mobility, surveillance, and trainer aircraft types with the US Air Force, Navy, and Marine Corps, as well as with the Royal Air Force, Royal Canadian Air Force, Royal Australian Air Force, Royal Netherlands Air Force, Royal Norwegian Air Force, German Luftwaffe, Republic of Korea Air Force, Finnish Air Force and Israeli Air Force. He also has attended the USAF Tactical Fighter Weapons and Tactics Course and Combined Force Air Component Commander Course, the Aerospace Defense Command's Senior Officers' Course, and portions of the Navy Fighter Weapons School (TOPGUN) and the Marine Aviation Weapons and Tactics Instructor Course.

In December 1989, he became the first US citizen to fly the Soviet MiG-29 fighter and the first Westerner invited to fly a combat aircraft of any type inside Soviet airspace since the end of World War II.

Dr Lambeth earned his PhD in Political Science from Harvard University. He is a member of the Council on Foreign Relations, the Board of Visitors of Air University, and the Editorial Advisory Boards of Air and Space Power Journal and Strategic Studies Quarterly. He also is the author most recently of *The Unseen War: Allied Air Power and the Takedown of Saddam Hussein* (Naval Institute Press, 2013). In 2002, he was elected an Honorary Member of the Order of Daedalians, the national fraternity of US military pilots.

### **GENERAL T MICHAEL ‘BUZZ’ MOSELEY (RETD)**

In 2008, General Moseley completed a distinguished 40+ year military career as the 18th Chief of Staff of the United States Air Force. In that capacity he served as the senior uniformed Air Force officer responsible for the organising, training and equipping of over 700 000 Active Duty, Air National Guard, Air Force Reserve and civilian forces. As a member of the Joint Chiefs of Staff, General Moseley and the other Service chiefs served as the principle military advisers to the President, the National Security Council and the Secretary of Defense. In this capacity, General Moseley also served as the nation's senior airman.

General Moseley graduated from Texas A&M University with both a Bachelor of Arts and a Master of Arts Degree in Political Science with a focus on Northeast Asia. He is a graduate of the Pilot Instructor Course at Randolph Air Force Base, Texas, as well as the prestigious Air Force Fighter Weapons School at Nellis Air Force Base, Nevada, where he later served as an instructor and squadron commander. He also attended the Navy's Fighter Weapons School (TOPGUN) at Naval Air Station Miramar, California. He is a resident graduate of the Air Force's Squadron Officers' School and the Air Command and Staff College, both at Maxwell Air Force Base, Alabama, as well as the National War College in Washington DC where he also later served as the Chief of Staff's personal representative to the faculty. He was promoted to Brigadier General in 1995 and served as a general officer for over 13 years.

General Moseley is a career fighter pilot with close to 3000 hours of total flying time. He has commanded a fighter squadron, a fighter group, the 9th US Air Force and US Central Command Air Forces.

General Moseley served on the Joint Staff in Washington, DC, and also served for two years as the Secretary of the Air Force and Chief of Staff's direct point of contact with the Congress as the Air Force's Director of Legislative Liaison.

He is the recipient of numerous awards throughout his career including: the General H.H. Arnold Award (the Air Force Association's highest tribute to leadership), the General Ira Eaker Fellow for 'Principled Leadership', and a Distinguished Alumnus Award from Texas A&M University.



General Moseley has been 'knighted' by Her Majesty Queen Elizabeth II, in being named a Knight Commander of the Most Excellent Order of the British Empire (KBE). The President of the French Republic has also named him a Commander in the National Order of the Legion of Honour, which is the highest decoration of the French Republic. His Majesty, the King of Saudi Arabia, by the award of the King Abdulaziz Excellence Medal has also honoured him with the Kingdom's highest award. He has received equally prestigious awards from the Crown Prince of the United Arab Emirates, the Minister for Defence from the Republic of Singapore, and from Brazil. He was personally awarded two Defense Distinguished Service Medals by the Secretary of Defense for his combat innovation and leadership in the Middle East. Upon retirement, General Moseley was awarded a third Air Force Distinguished Service Medal for his leadership and personal contributions to national security. Additionally, upon his retirement, he was awarded Distinguished Service Medals from the Department of the Navy, the Department of the Army and from the Department of Homeland Security (Coast Guard).

He currently serves as Chairman of Gulf Alliance Company and President, Chief Executive Officer of Moseley and Associates, an international consulting enterprise, focusing on global security matters and international relations. He also holds the position of Director at the EastWest Institute with offices in New York, Brussels and Moscow. He is also a member of the Council on Foreign Relations and is a lifetime member of the National Eagle Scout Association, the Order of Daedalians, the Air Force Association, the Thunderbirds Alumni Association and the Air Commando Association.

He and his wife Jennie have two children and three wonderful granddaughters. General Moseley is an avid big game hunter, wing shooter, and an avid reader of history.

### **AIR CHIEF MARSHAL SIR GLENN TORPY, GCB, CBE, DSO (Retd)**

Air Chief Marshal Sir Glenn Torpy was born in 1953 and joined the Royal Air Force in 1974 after achieving a First in Aeronautical Engineering at Imperial College, London.

His operational flying career included two tours flying the Jaguar in the reconnaissance and attack roles, a tour as a Qualified Weapons Instructor on the Hawk and command of a Tornado GR1A tactical reconnaissance squadron. In this latter role he saw active service during the First Gulf War, for which he was awarded the Distinguished Service Order. In 1994 he assumed command of Royal Air Force Brüggen in Germany, the largest Tornado base in the Royal Air Force.

Sir Glenn graduated from the Royal College of Defence Studies in December 1997 and the Higher Command and Staff Course in April 1998. He subsequently

moved to the UK Permanent Joint Headquarters as Assistant Chief of Staff J3 (Operations), where he was involved in Operation *Desert Fox* in Iraq and Operation *Allied Force*, the NATO intervention operation in Kosovo, for which he was made a Commander of the British Empire. He spent a short time as Director of Air Operations in the Ministry of Defence before taking over as Assistant Chief of the Defence Staff (Operations). Sir Glenn became Air Officer Commanding No 1 Group in March 2001, with responsibility for all Royal Air Force strike attack, offensive support, air defence and reconnaissance forces. During his time at No 1 Group he commanded the 22 000 British Forces participating in Exercise *Saif Sareea II* in Oman, and in 2003 was the UK Air Commander for Operation *Iraqi Freedom*, for which he was awarded the United States Legion of Merit for his part in the coalition operation. In July 2003 he became Deputy Commander-in-Chief Strike Command before being appointed Chief of Joint Operations at the Permanent Joint Headquarters July 2004, where he was responsible for all the United Kingdom's overseas operations, including those in Iraq and Afghanistan. Sir Glenn became Chief of the Air Staff on 13 April 2006. He was made a Knight Commander of the Bath in January 2005 and a Grand Knight Commander in June 2008. During his flying career Sir Glenn has amassed some 4300 hours of fast jet flying, predominately on Jaguar, Hawk and Tornado, but also on Typhoon. He retired from the Royal Air Force in July 2009 and joined BAE Systems as their Senior Military Advisor in January 2011.

Sir Glenn is married to Christine, and for relaxation enjoys playing golf, gardening, cabinet making and reading about military history. He is a Fellow and Council member of both the Royal Aeronautical Society and the City and Guilds Institute, a Liveryman of the Worshipful Company of Haberdashers and a Governor of Haberdashers' Aske's Boys' School.

### **AIR VICE-MARSHAL MEL HUPFELD, DSC**

Air Vice-Marshal Mel Hupfeld was born in Sydney in 1962. He joined the RAAF as a RAAF Academy Cadet in January 1980, winning the Flying Prize for his year and graduating with a Bachelor of Science degree in 1983.

Air Vice-Marshal Hupfeld's early career was spent in a variety of flying positions on Mirage and F/A-18 aircraft, primarily with No 3 Squadron and No 2 Operational Conversion Unit, before qualifying as a Fighter Combat Instructor in 1989. Following a period of service as B Flight Commander 3 Squadron, Air Vice-Marshal Hupfeld was appointed as the Executive Officer of 2 Operational Conversion Unit in 1995.

In 1997 Air Vice-Marshal Hupfeld was selected to attend the Royal Air Force Advanced Staff Course, graduating with a Master of Arts in Defence Studies

from King's College in London, before taking up post as a Deputy Director in the Aerospace Development Branch.

In 2001 Air Vice-Marshal Hupfeld took command of No 75 Squadron and led the squadron in operations in the Middle East on Operations *Bastille* and *Falconer*. In 2003 Air Vice-Marshal Hupfeld was awarded a Distinguished Service Cross (DSC) in recognition of his performance as Commanding Officer 75 Squadron on Operation *Falconer*, and his squadron was awarded a Meritorious Unit Citation.

On promotion to Group Captain in January 2004, he was appointed Director Aerospace Combat Development in the Australian Defence Headquarters, before accepting appointment as Officer Commanding No 81 Wing in January 2006. Promoted to Air Commodore in November 2007, he became the Director of the Combined Air Operations Center in the Middle East Area of Operations, before returning to Australia as the Director General Air / Director General Air Command Operations in March 2008. In December 2009, he took command of Air Combat Group where he oversaw all of the RAAF's fast jet combat aircraft to deliver Australia's capability to control the air and conduct precision strike.

Air Vice-Marshal Hupfeld was promoted and appointed to his current position as the Air Commander Australia on 3 February 2012. In this position he provides specialist air advice on raise, train and sustain issues to the joint environment.

Air Vice-Marshal Hupfeld is married to Louise, and his interests include cycling, running, fishing, light aircraft, hang-gliding and sailing.

### **AIR CHIEF MARSHAL SIR ANDREW PULFORD, KCB, CBE, ADC**

Air Chief Marshal Sir Andrew Pulford was commissioned into the Royal Air Force as a pilot in 1977 and, after flying training, joined No 72 Squadron, flying Wessex helicopters, beginning an association with the Support Helicopter Force which would last 25 years. During his flying career he accumulated over 5000 hours on both Wessex and Chinook helicopters, serving primarily in Germany with No 18 Squadron but including exchange tours with the Royal Navy's Commando Helicopter Force and the Royal Australian Air Force. He has commanded in every rank and has seen operational service in Northern Ireland, the Falkland Islands, Lebanon, the Balkans and the Gulf.

Sir Andrew's staff appointments have included command of the Support Helicopter Tactics and Trials Flight, a short spell in Headquarters Northern Ireland as the Royal Air Force and Army Air Corps Operational Requirements desk officer, a tour in the British Army's doctrine organisation and two years as Personal Staff Officer to the Chief of the Air Staff. He attended No 85 Advanced Staff Course at the Royal Air Force Staff College Bracknell in 1993 and graduated from the Higher Command and Staff Course in 2001. As Station

Commander of Royal Air Force Odiham for two years from December 2001, Sir Andrew commanded the UK Chinook Force through a period of unprecedented operational activity, including large-scale deployments to Afghanistan and Iraq. From command, he moved to the Directorate of Air Resources and Plans in the Ministry of Defence and was subsequently appointed to the position of Director, on promotion to Air Commodore, in August 2004. He was promoted again in February 2007 when he commenced an 18-month tour as AOC No 2 Group, commanding the Royal Air Force's Air Transport, Air-to-Air Refuelling and ISTAR forces, before moving back to the Ministry of Defence in October 2008 to take up the post of Assistant Chief of the Defence Staff (Operations). On promotion to Air Marshal in August 2010, Sir Andrew returned to Headquarters Air Command in the role of Deputy Commander Capability and Air Member for Personnel & Capability, and he was appointed Knight Commander of the Most Honourable Order of the Bath in the 2013 New Year's Honours List.

Sir Andrew was appointed Chief of the Air Staff in the rank of Air Chief Marshal in July 2013.

He married Lady Nicola Pulford in August 1982 and they have a daughter and a son. He enjoys sailing, skiing and motorcycling, and when time allows, walking his two dogs.

### **MR PETER JENNINGS, PSM**

Peter Jennings commenced as Australian Strategic Policy Institute (ASPI) Executive Director on 30 April 2012. Prior to that, he was the Deputy Secretary for Strategy in the Australian Department of Defence.

Peter's career has included extensive experience advising Government at senior levels, developing major strategic policy documents, conducting crisis management, and researching, writing and teaching international security.

Peter has previously held a number of First Assistant Secretary positions in Defence including First Assistant Secretary International Policy Division, First Assistant Secretary Coordination and Public Affairs, and Secretary of the Defence Audit and Risk Committee.

Peter was for a number of years the Director of Programs at ASPI. He wrote and commentated widely on defence policy and international security, and taught postgraduate studies on terrorism at the Australian Defence Force Academy (ADFA).

In 2002–03 Peter was a Senior Adviser in the Prime Minister's office responsible for developing a strategic policy framework for Cabinet. Peter had previously been

Chief of Staff to the Minister for Defence (1996–98) and Defence adviser to the Federal Opposition (1990–93).

In the Defence Department, Peter has also been the Deputy Director of the Defence Imagery and Geospatial Organisation (2002) and head of the Strategic Policy Branch (1998–99). In late 1999 Peter was co-director of the East Timor Policy Unit, responsible for developing Australia's policy approaches to the international peacekeeping operation in East Timor. Following that, as an acting First Assistant Secretary, Peter was closely involved in developing the 2000 Defence White Paper.

Peter studied at the London Business School in 2000–01 as a Sloan Fellow and was awarded a Masters of Science (Management) with Distinction. He has a Master of Arts Degree in International Relations from the Australian National University (1987) and a BA (Honours) in History from the University of Tasmania (1980–84). He has been a Fulbright Fellow at the Massachusetts Institute of Technology (1985). Peter taught politics and international relations at the University of New South Wales/ADFA (1987–90). He has written and published widely on defence and security issues.

Peter was awarded the Public Service Medal in the Australia Day 2013 Honours List for outstanding public service through the development of Australia's strategic and defence policy, particularly in the areas of Australian Defence Force operations in East Timor, Iraq and Afghanistan.

### **AIR VICE-MARSHAL GAVIN DAVIES, AO, CSC**

Air Vice-Marshal Davies joined the Royal Australian Air Force as a cadet navigator in 1979 and graduated to fly P-3B and P-3C Orion aircraft with No 11 Squadron at RAAF Base Edinburgh in South Australia. In 1987, he underwent pilot training and, after completing F111 conversion course, was posted in 1988 to No 1 Squadron at RAAF base Amberley.

In 1990, Air Vice-Marshal Davies was posted to Cannon Air Force Base, New Mexico, to fly F-111D aircraft on exchange with the United States Air Force. On return to Australia in 1993, he was posted to No 1 Squadron as the Operations Flight Commander followed by one year as Operations Officer at Headquarters No 82 Wing during 1996. After a posting in 1997 and 1998 as the Executive Officer at No 1 Squadron, Air Vice-Marshal Davies completed RAAF Command and Staff Course. In 2000, he commenced two years in Capability Systems within Defence Headquarters.

In 2002 and 2003, Air Vice-Marshal Davies' long association with No 1 Squadron was again rekindled when he returned as Commanding Officer and achieved 2000 hours flying the F111. He was Staff Officer to the Chief of Air Force during 2004

before taking up the post of Officer Commanding No 82 Wing at RAAF Base Amberley.

Air Vice-Marshal Davies worked as Director Combat Capability within Air Force Headquarters in 2006 and 2007, during which time he was deployed to the Middle East to work within the Combined Air Operations Center. In 2008 he was appointed Director General Capability Planning within Air Force Headquarters until 2010, when he was posted to Washington as the Air Attaché.

In June 2011, his future appointment as Deputy Chief of Air Force was published. He commenced this position in January 2012 on his return from Washington.

Air Vice-Marshal Davies is married to Rhonda, who is a registered nurse, and they have two children; Erin, who is herself a registered nurse (midwife), and Jacob.

# ABBREVIATIONS AND ACRONYMS

AAA	anti-aircraft artillery
ADF	Australian Defence Force
ADFA	Australian Defence Force Academy
ANZUS	Australia, New Zealand and the United States
ASPI	Australian Strategic Policy Institute
ATO	Air Tasking Order
AWACS	Airborne Warning and Control System
C2	command and control
CAF	Chief of Air Force
CAOC	Combined Air Operations Centre/Center
CAS	Chief of the Air Staff
CAS	close air support
CENTCOM	Central Command [US]
CFACC	Combined Force Air Component Commander
COIN	counterinsurgency
CONOPS	concept of operations
ELINT	electronic intelligence
FEAF	Far East Air Forces [US]
FPDA	Five Power Defence Arrangements
GCC	Gulf Cooperation Council
GPS	Global Positioning System
IJN	Imperial Japanese Navy
ISR	intelligence, surveillance and reconnaissance
ISTAR	intelligence, surveillance, target acquisition, and reconnaissance
JDAM	Joint Direct Attack Munition
JASSM	Joint Air-to-Surface Stand-off Missile
JFACC	Joint Force Air Component Commander
JSTARS	Joint Surveillance Target Attack Radar System
LGB	laser-guided bomb
NATO	North Atlantic Treaty Organization
NVA	North Vietnamese Army

QDR	Quadrennial Defense Review [US]
RAAF	Royal Australian Air Force
RAF	Royal Air Force
RFC	Royal Flying Corps
ROE	rules of engagement
SAC	Strategic Air Command
SAM	surface-to-air missile
SIGINT	signals intelligence
SOF	Special Operations Forces
SPS	Serbian Socialist Party
SWPAC	South-West Pacific
UAS	unmanned aerial system(s)
UAV	unmanned aerial vehicle
UN	United Nations
US	United States
USAAF	United States Army Air Forces
USAF	United States Air Force
USMC	United States Marine Corps
USN	United States Navy
VC	Viet Cong
VVS	Voyenno-Vozdushnye Sily [Soviet Air Force]



# ACKNOWLEDGEMENT OF COUNTRY

## GROUP CAPTAIN LISA JACKSON-PULVER

I am honoured this morning to be invited by the Chief of Air Force, Air Marshal Geoff Brown, to deliver an acknowledgement of country.

I stand here before you as a Koori woman, whose peoples come from nearby, across the mountains and the land of the Wiradjuri, a little south from there in the Yorta Yorta lands, and from the far north coast of the Dunghutti people, and even further afield to the peoples of Wales and to those of the ancient lands of Scotland. My Aboriginal connections to people include family names of Jackson, Campbell, Bollard, Llewellyn, Angel, Smith, Powell and some others.

For those of you who come from other places, an acknowledgement of country, like a welcome to country, is an ancient Aboriginal custom that has been incorporated into our national culture. It is a simple way to begin important events such as this one today where we have come together to celebrate a century of military aviation.

It is a powerful thing to acknowledge the traditional custodians of this land. It recognises the role and significance of their ways. Simple it may be but it is deeply appreciated by First Australians as a sign of acceptance and respect. We have come a long way on the path of reconciliation since the Paul Keating 'Redfern Speech' and Prime Minister Kevin Rudd's apology to the 'stolen generations'. That said, I know firsthand that we still have a long, long way to go, but I am proud to say that Air Force is now a leader in embracing this difficult journey with grace and with a sense of pride. It fits our motto *per ardua ad astra*, 'through struggle to the stars'.

Some of you might recall Auntie Matilda House's welcome at the opening of the 42nd Parliament. In so doing, Auntie invited all who come here to this land to belong, and to enjoy this place, to be responsible and to live here. She encouraged us to be a part of the growing culture that is now modern-day Australia. She also welcomed us all, from the earliest arrivals to the land and all those since, to belong here in country, to be nurtured, to grow and to contribute to the ever-changing physical, environmental, spiritual, social, emotional and political landscape of this place we today call Australia.

For me, to acknowledge the traditional custodians of country allows me to be a good guest, who contributes appropriately and who stays well. This is no different to when you are welcomed into a new place like a church or a mess or someone's home and your hosts show you where you can put your belongings, where you

can rest, where you can pray and where you can wash, eat, dance, meet and greet. When I think about country, when I am not on my land, I remember a conversation I had with my cousin about how our country never forgets us, no matter how long we are away, and that we must never forget country. We must care for country, respect country and speak to country. Country is real, it is alive, it is vibrant and it adapts over time and space and has been doing so since the beginning of time. Country holds dear our values, our loves, our stories, our ancestry, our dreamings and our life. We come from the land and, eventually, we will all return to the land. When we acknowledge country, we do so recognising that this is a ritual that is not negotiable. It must be done when we are visitors to a place and we must pay attention to those on whose land we stand. Country knows when we do it and this makes everyone happy.

I introduce myself to this country again today, as I have done many times before, and on behalf of all of us here, including our treasured Air Force elder, Uncle Harry Allie, I pay my deepest respects to the elders, past and present. On behalf of everyone here today, I thank you for allowing us to be here; it is not something that we will take for granted.

# OPENING ADDRESS

## AIR MARSHAL GEOFF BROWN

The Honourable Dr Brendan Nelson, Director of the Australian War Memorial, fellow Service Chiefs and their representatives, former Service Chiefs, guest speakers, distinguished guests, ladies and gentlemen, on behalf of the Royal Australian Air Force, welcome to the 2014 Air Power Conference. As I said last night, I particularly appreciate the effort that many of you have made to be here today, and particularly thank those who have travelled a long distance from overseas.

Hosting this event has been made possible by the generous support provided by our sponsors, and I would like to just take the opportunity to quickly acknowledge them. Our principal sponsor this year is Boeing, as they have sponsored the previous four Air Power Conferences. In addition to generously sponsoring our conferences, they continue to be a major partner in Air Force in supporting, developing and supplying Australian air power. We have also received generous support from L3, Rolls-Royce and Qantas, and I would also like to thank DefenceHealth and Defence Bank for their ongoing support.

The first Australian Air Force Air Power Conference was held in Canberra in March 1991. The topic was 'Smaller but Larger: Conventional Air Power into the 21st Century'. Since then, our Air Power Conferences have grown into regionally and internationally respected forums to discuss a number of important and relevant air power themes.

Our conferences attract a diverse audience from a very broad range of backgrounds. There are Chiefs of Service, or their senior representatives, from 22 countries attending this conference today. We are proud to have attracted such a strong international guest list, one which represents partners, allies and friends. I am delighted to say we have over 1000 attendees at this Air Power Conference today.

An Air Power Conference provides unique opportunities to improve and widen our air power understanding and development. The value gained from conferences like this continues to represent a very sound investment, from my point of view.

This year marks a centenary since the first military aviation flight on 1 March 1914 by Lieutenant Eric Harrison. He did it in a Bristol Boxkite at Point Cook, a flight that we actually re-enacted two weeks ago at the Centenary of Military Aviation Air Show. Given such a historic milestone, I think it is appropriate that this conference focuses on the impacts, achievements, issues and characteristics of air power in conflict over the past 100 years. Studying and debating history enables us to understand the past, which, in turn, helps us shape the present and the future.

Our speakers have been asked to examine the use of air power in a variety of conflicts since World War I. We are fortunate this year to have a number of leading experts to address the impact of air power since its inception. Air power has developed enormously since 1914. Yet, despite this, air power today still provides our nation and our joint commanders with what I term those four enduring roles: air mobility; strike; intelligence, surveillance and reconnaissance (ISR); and control of the air.

As we review and debate 100 years of military aviation, we must consider what it means in a contemporary setting and also into the future. Knowing our past and understanding our present is important. It provides us the basis for planning, for ensuring we provide the right people and equipment to deliver the effects required by Government and our nation into the future. The acquisition of cutting-edge capabilities such as the F-35, Growler and P-8 Poseidon, matched with the professional mastery of our people and quality of training, will ensure we continue to deliver the outcomes required by Government.

On the theme of knowing our past and understanding our present, one of the most important and enduring initiatives in Air Force history has been the development and renewal of our air power doctrine. The first edition of *The Air Power Manual* was produced in 1990 as a result of the leadership and vision of Air Marshal Ray Funnell, who is with us today. In two and a half decades *The Air Power Manual* has been updated regularly and the most recent edition was released in 2007.

*The Air Power Manual* is a forward-looking document. It elaborates on the national security context and acknowledges our past achievements and the lessons we have learnt. It projects our vision of how Australian air power will be generated, employed and sustained in the years ahead. It is our capstone doctrine statement. It is the basis of our understanding of professional mastery and it is essential reading for all members of the Royal Australian Air Force.

The second edition of the companion manual, *The Australian Experience of Air Power*, provides an insight into the origins and developments of the Australian air power doctrine.

It is with great pride today that I actually release the sixth edition of *The Air Power Manual* and the second edition of *The Australian Experience of Air Power*.

Ladies and gentlemen, thank you very much for attending the Australian Air Force 2014 Air Power Conference. I know the next two days will be enjoyable and rewarding, and I would now like to invite our keynote speaker, the Honourable Dr Brendan Nelson, Director of the Australian War Memorial, former Minister for Defence and former Australian Ambassador to Belgium, Luxembourg, the European Union and NATO, to deliver the keynote address. Thank you.

# KEYNOTE ADDRESS

## THE HONOURABLE DR BRENDAN NELSON

Good morning. Thank you very much Air Marshal Geoff Brown, Chief of Air Force (CAF), the Honourable Teresa Gambaro, Chiefs of Air Forces from other nations, members of the Australian and international military communities, I particularly recognise again and welcome the sponsors and those of you who work and drive technological advancement in the military technological space, distinguished guests, Indigenous elders, ladies and gentlemen.

As CAF remarked, this is an Air Power Conference—‘A Century of Military Aviation’, and I know you are sitting there wondering, ‘Why on earth have we got a fellow who is the Director of the Australian War Memorial giving the opening address at such a significant and important international conference?’ And I can see one of our people pointing to his mate next to him and saying, ‘Yeah, I told you so.’

CAF mentioned in his introduction that, in fact, for almost three years I was Australia’s Ambassador to NATO and the European Union and Belgium and Luxembourg. When I was thinking about what I might do when I came back to Australia, having been asked by the then government if I would spend another, a fourth, year in Belgium and having declined that opportunity, I said to my wife, ‘Look, I really need to do something meaningful when I go back to Australia.’ And the opportunity came up to take up the directorship of the Australian War Memorial. I went through a process, and when I had been advised that I was going to be appointed to this position I confided in three friends, who are very close to me, and one of them said to me, ‘I can’t believe you’re doing that. You’re wasting your life. You’ve got far more important things to do for Australia than rearrange its history.’ I said to him, ‘Well, firstly, if you can find something you are passionate about and be paid for it, isn’t that mission accomplished? But, more importantly, this has much more to do with our future than it does our past.’ As CAF said in his introductory remarks, reflecting upon and, more importantly, understanding our history—in this case, that of military aviation—has everything to do with our future. My only observation is that a people that does not know its history and, more importantly, does not understand it, is dangerous.

In fact, the most important year in Australia’s history after 1788 when the British First Fleet arrived, and with it the origins of the Australia we now have and all of the devastation that that meant for Indigenous Australians, the next most important year was 1942—and all of those events that happened after the fall of Singapore—and in that year, amongst many other things, the origins of the

alliance between Australia and the United States was formed, particularly from the Battle of the Coral Sea. TS Eliot wrote: 'A people without history is not redeemed from time, for history is a pattern of timeless moments'.<sup>1</sup>

For a period of time I was a member of the Australian Parliament, for almost 14 years, and in the second year I was a Member of Parliament, a constituent sent me a book—when you are a Member of Parliament people cease to be human beings, they become constituents. A very good time to send a book to a busy person is just before Christmas. This was a book authored by a German physicist and philosopher called Bernhard Philberth, and it is a very heavy theological read entitled *Revelation* about how people manage and effect change, both individually and institutionally. And he wrote in part: 'Progress leads to chaos if not anchored in tradition. Tradition becomes rigid if it does not prepare the way for progress. But a perverted traditionalism and a misleading progressivism propel each other towards a deadly excess, hardly leaving any ground between them'.<sup>2</sup>

The challenge, as I have found it over the years in various positions of leadership from the Australian Medical Association through my parliamentary life and other things, is how do you reassure the traditions? The people whose vision, hard work, sacrifice and values gave you what you have—in this case a century of military aviation—to reassure them that the future is going to be built upon that which they have worked so hard to give us, whilst at the same time restraining progressivists who seemingly want change for its own sake, neither understanding nor worst still respecting that which they have been given from a traditional past.

The Royal Australian Air Force is the second oldest air force in the world and, as many of you know, was established on 31 March 1921, but its origins in fact go back to the Australian Flying Corps established on 22 October 1912. The Royal Australian Air Force has served our nation in every war in which we have been involved since 1939, and every conflict since the end of World War II. It has also, since 1948, led or participated in every peacekeeping and humanitarian operation in which our country has been involved, and it has since the early 1960s been the bedrock of Australia's disaster relief operations in our region and throughout the world.

I know that a number of you last night attended the Australian War Memorial and participated in the Last Post Ceremony that we conduct every evening, at which we profile the story behind one of the men and women of the 102 700 who have given their lives in our uniform and in our name over more than 100 years. You may have noticed the bronze panels, which line the cloisters of the Australian

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1 TS Eliot, *Four Quartets – Little Gidding*, Harcourt, Brace and Company, New York, NY, 1943, p. 38.

2 Bernhard Philberth, *Revelation*, BAC Australia, Plumpton, 1994, p. 147.

War Memorial, and they list the names of those 102 700. Panel 127 lists a name—without rank, without military honours—and it is ‘Middleton R.’ It does not tell you that he was a pilot officer and it does not tell you that he was awarded a Victoria Cross. But Rawdon Middleton was a pilot officer who was commanding a four-engined Short Stirling bomber and had already completed 28 operations when in late November 1942 he undertook his 29th operation. In those days in Bomber Command, 30 operations, 30 flights, was considered a tour, but so much respect did they have for him that three of his crew, having done more than 30 operations, volunteered again to fly with him.

Over Turin there was a massive explosion in the cockpit, the windscreen was shattered, obviously from ground flak, and Middleton was severely wounded—he lost his right eye, leaving the socket and bone exposed—and he briefly lost consciousness. Despite his injuries, they completed their bombing run and then commenced getting the aircraft back on the four-hour flight to England and base. They took ground fire again over France on the return and there was insufficient fuel to get the aircraft back to base. Middleton got the aircraft back over England, five of the crew parachuted to safety, and two remained with him. They parachuted out over the English Channel and were subsequently drowned, and Middleton went down with his aircraft.

That is but one of the stories of the 14 000 Australians, almost all men, who have given their lives in the uniform of the Royal Australian Air Force and the Australian Flying Corps over more than 100 years. But I want, as a civilian, to say to all of you, and particularly from my experience as being Minister for Defence of this country, that the respect that we have is not confined only to pilots, but also to flight engineers, to technicians, to loadmasters, to ground crews, to medical and nursing staff, and the logisticians and all of those who ensure that everything that needs to be done is done in support of our aircraft.

Now that was a different world and it was certainly a different Australia but, as I said, the past has everything to do with our future.

The introduction of the military aeroplane was probably one of the most transformative technological advances of the 20th century. In fact, in July 1914, General Sir Douglas Haig told the British Army Staff College, ‘I hope none of you gentlemen is so foolish as to think that aeroplanes will be usefully employed for reconnaissance from the air. There is only one way for a commander to get information by reconnaissance and that is by use of cavalry.’<sup>3</sup> It is a matter of history that only two months later in the German advance on Marne that it was the Royal Flying Corps that observed the emerging gap in the right flank of

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3 Quoted in Sebastian Cox & Peter Gray (eds), *Air Power History: Turning Points from Kitty Hawk to Kosovo*, Frank Cass, Abingdon, 2002, p. 94.

the German advance, and then the Anglo-French forces were able to prevent the German advance on to Paris. And the rest, of course, is history. The world would most certainly have been quite a different place from what it is today had Germany controlled all of continental Europe in that decade and beyond.

The demands of war rapidly accelerated both military doctrine and technological capability. Early reconnaissance evolved rapidly into platforms that were then used for control of the air, close air support, and battlefield interdiction. Air Commodore Richard Williams, one of the great pioneers of our Air Force, returning from the Imperial Defence College and drafting the first significant strategic level memorandum on air defence in Australia, saw the reach, flexibility and responsiveness of air power as being an answer to the dilemma facing defence planners in our country. And that was, and still is, how to defend Australia's long coastlines from attack with limited manpower and resources.

Internationally, of course, Hugh Trenchard and others saw air power as a means of avoiding long and costly wars. World War II, of course, challenged the thinking of early air power pioneers and theorists; nonetheless, success hinged on control of the air and the ability to generate effects from it. Erwin Rommel famously said, and I quote, 'The fact of British air superiority threw to the winds all the tactical rules which we had hitherto applied with such success ... In every battle to come the strength of the Anglo-American air force was to be the deciding factor.'<sup>4</sup> And, of course, his chief Allied protagonist, Montgomery, simply said in 1943, 'If we lose the war in the air, we lose the war, and we lose it very quickly.'<sup>5</sup>

World War II saw the application of air power in conflict as unfettered and unrestricted, and in our region, of course, it had a nuclear end. In the Cold War it evolved into a necessity to limit selectively both target types and the level of destruction that was permitted. Air power became increasingly a political deterrent as much as a military weapon.

The Berlin Airlift heralded air power as 'hard' diplomacy. Asymmetric threats have then demanded an evolution in force development and operational concepts, and a change in how we understand and apply air power from the political to the tactical level. Australia has developed its own indigenous air power doctrine, to which CAF referred in his latest release of the *Air Power Manual*. But it includes a mastery, and our Air Force having mastery of its own Air Force personnel; planning and executing campaigns using capabilities based on a deep understanding of the flexible and ubiquitous nature of air power.

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4 BH Liddell Hart (ed.), *The Rommel Papers*, Collins, London, 1953, p. 286.

5 Quoted in Wing Commander Harv Smyth, RAF, 'From Coningham to Project Coningham-Keyes', *Air Power Review*, vol. 10, no. 1, Spring 2007, p. 10.



The roles of air power are many, but they include, of course, control of the air—in the end, that is what it is all about. Strike, intelligence, surveillance and reconnaissance; and of all of the things that have changed perhaps most significantly in recent times, it has been that, especially with unmanned aerial systems (UAS). The Heron, for example, has given us an extraordinary capability in countering improvised explosive devices, providing overwatch of patrols and convoys, earlier warning of threats, reducing response times and significantly improving the fidelity and reliability of intelligence. And then the E-7 Wedgetail, the P-8A and the Growler have all amplified that beyond our comprehension, perhaps even only a decade ago.

The Triton maritime UAS will change maritime surveillance, and the P-8, with its enhanced sensors and weapons, and then amplified again by the KC-30A air-to-air refueller, mean long-range endurance across a vast maritime area of interest. And then, of course, there is surface maritime warfare. The Hornets—our conventional Hornets, our Super Hornets, Growlers—all of those have amplified electronic warfare and the capability for both strike and defence.

The F-35 will replace our conventional Hornets with stealth, weapons, sensors, networks and data fusion capacity. The multi-role nature of the F/A-18 Super Hornets and the F-35s mean that we are capable of strike options, and the support of the KC-30As and the E-7s mean wide-ranging, situationally aware, well-coordinated force packages. Then, of course, JASSM (Joint Air-to-Surface Stand-off Missile) and the Joint Stand-off Weapon will significantly increase the lethality and survivability of our force. And then there is the protection of ground forces. We need the most support we possibly can provide from air power to our ground forces, and UAS are critically important—they certainly have been in Afghanistan—with identification of clearly defined targets and prosecution of those targets, and they have saved many lives. Armed UAS provide significant potential for kinetic operations in the future.

As I said earlier, control of the air is eventually what it is all about. Hornets, Super Hornets, E-7 Wedgetails, the KC-30A multi-role tanker transports, all of those have revolutionised Australian control and coordination of air combat in our fleet. The future fitment of the cooperative engagement capability (CEC) to the E-7, with CEC-equipped air warfare destroyers, will enable us to shape and engage targets beyond the radar horizon of those destroyers with SM-6.

However, the real ‘game changers’ are the EA-18G Growler and the F-35A Lightning II 5th generation fighter. The Growler’s tactical jamming pods mean that intelligence, surveillance and reconnaissance (ISR) is maintained and that it is also maintained in a contested environment. The F-35 will deliver to us advanced stealth, full integration of its own sensors and, with networking ability, the sensors of other aircraft. Multiple data will be collected; it will be fused and presented to

the pilot as a single display. Then, of course, unmanned aerial combat vehicles are now also on our horizon.

For the everyday civilian, what is most visibly seen is mobility provided by our C-17As, the C-130Js, our multi-role tanker transports, and we will soon have C-27Js, and then the amplification provided by our rotary wing and other fleets from Navy and Army.

Geoff Brown, our Chief of Air Force, in introducing me to someone yesterday, said, 'Oh, Brendan was the Minister who made the decision to buy Super Hornets.' I would just like to say something about that, because I know some of you at the time thought, 'What on earth are they doing here in Australia?' And I know our Air Force at the time was asking themselves similar questions. Just to be clear about this, early in the 2000s our Air Force planners developed a new air combat capability plan for our nation. When I became the Minister early in 2006 I became satisfied of two things. The first is that it is most certainly the right plan for our nation, for our strategic needs, and the resources that we are likely to have available to support it. The second thing of which I became convinced was that it was associated with very deep risk, scheduling risk in particular.

Our nation, uniquely, was the last that was still flying ageing F-111s, and we had to make decisions about when we would retire them. The air combat capability plan involved not only acquiring, at that stage, up to 100 F-35s, it also involved the retirement of those F-111s, the upgrading of conventional Hornets and the delivery of Wedgetail. And in 2006, as far as we were concerned, Boeing was quite a different company from the one that it is today. We were seriously let down by them on Wedgetail, and we were also let down by them on Vigilare, the ground-based network centric air warfare system. Both of these were and are today essential elements—working extraordinarily well I might add—of our air combat capability. Then, of course, multi-role tanker transports, as I mentioned earlier, and JASSM and other elements of our air combat capability were included in the plan.

I remember talking to Tom Burbage, then leading the program at Lockheed Martin. I said to him in Washington in late 2006, 'Tom, the biggest risk to the F-35, in my view, is not the technical complexity of the aircraft itself. It doesn't lie with your engineers at Fort Worth. The biggest risk is in the US Congress. The biggest threat to this plan actually lies in the vagaries of decision-making that is going to be made in Washington and in the capitals of the other partner countries that are coming on board.' And the way that I saw it, particularly at the time, was that my nation could not afford a significant gap—indeed, any gap—to emerge in air combat capability.

Geoff Brown and his antecedents had convinced me that the single most important capability we had was control of the air; that we needed to ensure

that we could move our Navy and our Army, particularly in our immediate region, with control of the air. And that is why we made a decision to buy 24 Super Hornets and subsequently, as you know, Growlers. We made the decision because we have complete confidence in the Super Hornet. When, at the time, I was reading reports in the media about the very poor capabilities of the Super Hornet, I remember saying to my Chief of Staff, 'I hope our strategic competitors are reading this and believing it'. It is an extraordinary aircraft.

It will be for our Government to decide in the longer term how many F-35s we will acquire and what the nature and composition of our air fleet will be. But, just to be clear about it, we made the decision to acquire Super Hornets because I was convinced that it was the right thing to do. Prescience perhaps at the time, although it was not seen that way by many others, but certainly for Australia and Australia's requirements, Super Hornets, Growlers and F-35s are a remarkable combination and we have every confidence, as I say, in our personnel and training to deliver what our country needs.

I would just conclude by making one other observation. Paul Kennedy is the Yale Professor of History and head of its International Security Studies Centre, who just over two years ago published an essay, which perhaps many of you have seen, but it is worth reflecting on it as you reflect on our past and, more importantly, inform on our future with that past over the next two days. Kennedy made the observation that at the end of Napoleonic Wars and at the end of World War II, it was obvious the world had changed and it was never going to be the same again. But there are other times in history where the world is changing and, as we live through that change, we do not appreciate the scale of that transformation and the significance of it. A person who had lived in 1480 would not have recognised the world of 1530—the formation of nation-states, the splintering of Christendom, the expansion of Europe into Asia and North America, the Gutenberg communications revolution, amongst many others.

We are living, he argues, in such a time now. It is not just US currency no longer being 85 per cent of global reserve currency, but now barely 60 per cent, nor indeed the existential crisis in Europe from which it will certainly emerge—its financial crisis necessarily requiring the liberal democracies of the world in that block to focus more on themselves than usual. Nor indeed is it the post-World War II structures that have served us so well that he argues are failing the world that is, let alone the one that is coming, whether it is the United Nations Security Council or the key instruments of the World Bank and the IMF. But the most significant change is happening in our region, in the Asia-Pacific. The re-emergence of China means that we will live, within a decade, in a world we have not lived in since the Franco-Prussian War or the Qin Dynasty.

As China re-emerges and the relationship between the United States and China is forged, and forged in our region—a region, as you all know, replete with very

deep geo-strategic uncertainty and still deep, unresolved historical enmities in some cases—it is extraordinarily important that we have a rules-based multilateral order which allows the nations of the Asia-Pacific, including China and the United States of course, to discuss and normalise the resolution of security, economic, environmental, trade and other issues in forums that are supported by the nations in our region.

And beyond the political turmoil that goes on in our political class—just taking as an example the remarkable transformation of Indonesia over the last decade—when the ups and downs occur in the relationship, as a consequence of what happens at a political level, the resilience that has been built into the Australia-Indonesia relationship, as it has the relationship my country has with nations in our region, in South Asia and also in other parts of the world, it is you that provide that resilience.

Whatever happens between our governments of the day at a political level in our nations, the relationships, in my experience, between our senior and middle-ranking defence personnel build resilience into those relationships, which give us every reason to be confident about the future that we are going to have.

As Henry Kissinger observed in his book on China, there is much in our region in common with Europe after unification of Germany in 1871, but equally there is much that we can be confident about in the way we manage the tensions that are in our region for the future.

I guess the final thing I would say in that regard is that we are living in a world where events that happen in one part have direct and immediate consequences in another. There is less time to react to these things, and the most important thing that we need in this world of extraordinary uncertainty, of technological change and certainly globalisation, unknown perhaps indeed since World War I itself and the period leading up to it, the thing we need most is one another. And that is why your presence, those of you who are not Australians, at this conference is so important, not only to us and our relationships with the rest of the world, but indeed the security of it.

# AUSTRALIA AT WAR

## PROFESSOR GEOFFREY BLAINEY

Mr Chairman, Air Marshal Brown, distinguished overseas guests, and the numerous members of the Royal Australian Air Force: thank you for the generous introduction. We have a star-studded cast of specialist speakers about various facets of military aviation, in the next two days. I am a background speaker.

Australia for a long time had little influence on the world's military affairs. Its population did not pass four million until the early 1900s. But occasionally in indirect ways this nation did have influence.

Brendan Nelson, in his opening words, mentioned Hugh Trenchard, who many acclaim as the founder of the Royal Air Force. When the Boer War was fought in South Africa between 1899 and 1902, and Australia sent 16 000 volunteer soldiers and a large number of horses to fight alongside Britain, one of the soldiers was Sergeant Lewis from South Australia. During the fighting west of Johannesburg, he was in a farmhouse which was under attack from the Boers, and it seemed as though the Boers would capture it. The English commanding officer said to Sergeant Lewis, who was an excellent horseman like so many of the Australian soldiers of that day, 'Could you go for help?' He galloped away and saw a British regiment some distance away and they said, 'It's too difficult at the moment'. He went back and said, 'I can't get you help at the moment'. The officer in charge of the farmhouse was Hugh Trenchard and he stood up in indignation and was hit by a Boer bullet, and badly wounded in the chest.

Incidentally, I knew Gilbert Lewis. He became a farmer in Western Australia and in 1962 when an excellent biography of Trenchard was written, he found an outline of that incident when he helped to save Trenchard's life. So Lewis wrote to the English author, 'I am the Sergeant Lewis you mention on page so-and-so'. And he got back a wonderful letter from the author saying in effect, 'Isn't it great that you can confirm my biography'.

Australia's indirect influence on Europe's naval contests was profound. In 1903, when the German-English naval rivalry was growing, an Australian went to the present Czech Republic to a spa town called Marienbad. His name was William Knox D'Arcy. Earlier he had lived in the Queensland river port of Rockhampton as a solicitor, president of the rowing club, and a successful investor. A small mine had been founded nearby and he acquired shares at a trifling cost. Soon, Mount Morgan was the richest gold mine in Australia, and 36 per cent of the dividends went to Mr D'Arcy. His wife said, 'Why are we living in Rockhampton with all this money?' They moved to London where they lived in extravagant style.

D'Arcy was persuaded that oil might be found in the Middle East: at that time it produced no oil. He began to drill for oil in Iran, then called Persia, his venture financed almost entirely by his dividends from Mount Morgan in Australia. In 1903 he went to the spa town of Marienbad and there he met Admiral 'Jacky' Fisher, soon to be the head of the Royal Navy. D'Arcy said, 'I'm drilling for oil, I think I'll find it'. Fisher was intensely interested for he believed that the Royal Navy must move from coal to oil. D'Arcy found no oil, and began to run low in money. A Scottish company, Burmah Oil, was persuaded to help finance the search. Admiral Fisher took part in all these negotiations.

In 1908 they found the first oil in the Middle East—in Persia. The Middle East has never been the same again. Britain realised, having no secure supply of oil, that somehow it must obtain this oil. Eventually, when Churchill became First Lord of the Admiralty in 1911, three years before the outbreak of World War I, he knew that oil was becoming all-important; a source of oil that Britain could control. The British Government under Churchill decided that, while the brand-new baby submarines were using oil, while many of the new destroyers were using oil, all the great dreadnoughts, the mightiest ships in the history of the world to that time, also must use oil rather than black coal. As Winston Churchill wrote, 'for the first time, the supreme ships of the Navy, on which our life depended, were fed by oil and could only be fed by oil'. Here was a momentous change—the transition of the world's mightiest navy from complete dependence on British coal to complete dependence on foreign oil. Wisely, the British Government on the eve of World War I acquired a powerful interest in the company that produced Persian oil.<sup>1</sup>

Only a tiny event in Australia's own history, D'Arcy's discovery of oil in the Middle East was a major event in international history and in the history of navies and air forces. Never had Australia wielded such influence on the wider world.

In 1905, in Melbourne, there lived a recluse of a man who was a consulting engineer and also an inventor. His family came from the goldmining town of Maldon, about 140 kilometres north-west of Melbourne. Interestingly, two famous Australians were called 'Maldon' at their christening. The cricketer, Bill Woodfull—captain of Australia in the bodyline cricket tests—was christened William Maldon Woodfull, as was the inventor, Anthony George Maldon Michell whose family also came from the gold town of Maldon.

AGM Michell, then a young engineer, had a very simple idea. At that time the propeller shafts of the largest ships had trouble in coping with the powerful thrust from the engines. The unmanageable force of the thrust actually imposed a limit on to the size of the ships that could be built. Michell devised a thrust bearing

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1 Winston S Churchill, *The World Crisis 1911–1918*, abridged and revised edition, Macmillan, London, 1943, pp. 91–92

or block which enabled huge warships and merchant ships to be built. The new dreadnought battleships relied on his invention. It is curious that in the years 1900 to 1914 this small country had such influence on military technology.

For the benefit of our distinguished visitors, some of whom may not know Australia, several important facts about our strategic position should be outlined. Here is the only nation with a whole continent to itself. Our first Prime Minister, Edmund Barton of Sydney, memorably said, 'For the first time in history, we have a continent for a nation and a nation for a continent'. That simple truth had, and still has, profound defence implications. How can one defend a landmass so huge but in the possession of a nation that holds a relatively small population?

In retrospect, it is surprising that this one continent belongs to just one nation. Why did the Netherlands or France not settle part of this big land?

It is a little known fact that a French navigator passed within 50 kilometres of Sydney before Captain Cook arrived. He was Captain Jean de Surville in the ship, *St John the Baptist*, and in 1769 he had set out from Pondicherry, a French port on the east coast of India. He and his promoters believed that somewhere in the far South Pacific, in an area where no European had explored, there lay a Jewish colony, and his ship—much larger than Captain Cook's *Endeavour*—set out to find it. He did not find it, but he passed so close to Sydney Harbour that his crew could smell land. He was actually there half a year before Captain James Cook arrived in his British ship.

French officers and seamen were also here in the week Captain Arthur Phillip arrived from Britain with the First Fleet in 1788. Commanded by Comte de Lapérouse they entered Botany Bay where Sydney Airport is now located—in fact, the runway now extends into the bay. They entered the bay, anchored there for some weeks and then sailed away. They did not return, for they were wrecked in the South-West Pacific. I suppose if the French had not lost the Battle of Waterloo in 1815 they would have occupied one or two regions in Australia. But after losing the Napoleonic Wars they thereby ceased for some 30 years to be such a major world power, and lost the opportunity to acquire new territories. Their only major annexation near Australia was the West Pacific island of New Caledonia, which ever since the 1850s has been part of France.

Even in the 1890s it seemed likely that there would permanently be several 'Australias', not one. At that time, each of the six Australian colonies was, in economic life, quite independent. They taxed each other's goods that came across the border. They ran their own immigration and taxation policies. They even imposed duties on imports from England. They had their own small navies and armies, if they could afford them. When the Boxer Uprising took place in China in 1900, both Victoria and New South Wales sent part of their navies to join with the allied forces then active in north-east China.

In the 1890s it appeared as if Western Australia would become a separate nation—in some ways, in its own mind, it still is, and understandably. Western Australia only came into the new federation or Commonwealth of Australia at the last moment. Queensland at first was not sure whether it should join. Sydney was not sure and at the first referendum in 1898, when the voters of Australia had to decide whether they should form one nation, the majority of people in Sydney voted 'No'. And yet, miraculously, agreement was reached; and in 1901 was born this Commonwealth of Australia with its own federal parliament and its own united defence forces and its own slowly developing foreign policy.

Another characteristic of the geography of Australia is that it is situated a long way from the traditional centres of world power. In the era of slow sailing ships it was extremely isolated. I once invented a phrase, 'the tyranny of distance', to describe this dilemma.<sup>2</sup> In some ways the distance has been tamed by new technology, not least by aviation, but distance is relative.

Australia, in the 19th century, was far away from the world's great powers. It was far from the major though not the minor wars. The colony of Victoria, of which Melbourne was the capital, sent a small force and a small warship to New Zealand to fight in Britain's war with the Maoris in the 1860s. That was very close to home but a war of no international significance. New South Wales sent a small army to the Sudan in 1886 to take part in the colonial war being fought there; but, having to come from far, the soldiers arrived when the war was almost over. Australians fought in the Boer War, as I have already mentioned, but that was a war, in global terms, of no great significance.

In 1904 for the first time Australia clearly was no longer remote from the world's major conflicts. On land and sea, Russia and Japan fought a brief war. It was the first naval war in history that the newspapers could follow closely because the Russian fleet, originally stationed in the Baltic Sea, had to sail around the world in order to meet the Japanese ships in their home waters. 'Whenever will the Russians reach Japan?' Their warships came through the North Sea and the Atlantic—they were not allowed through the Suez Canal—sailed close to Cape Town and South Africa, called at Singapore and at last they reached Japanese waters.

In one of the most important naval battles up to that time, the Japanese, a newcomer to modern warfare, defeated the Russians in the Battle of Tsushima in 1905. In Europe the victory was greeted with astonishment. Here was a new Asian power defeating a strong European power. Australia, seemingly so far away from

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2 Geoffrey Blainey, *The Tyranny of Distance: How Distance Shaped Australia's History*, Sun Books, Melbourne, 1966.



the world, was suddenly brought closer. Here was a glimpse of Japan rising as a world power.

We usually view Australia as very closely tied to Britain in that era, and of course it was. But when Australia saw its own distinctive strategic interests challenged, it did not always listen to Britain. Australia stubbornly tried to have its own way. I think that is one reason why the British Empire, in its heyday, often worked so well; there was give and take.

The Americans then were building up their Navy. At sea it was called the 'Great White Fleet'. It commenced a tour of the Pacific in 1908 and the Prime Minister of Australia, to Britain's surprise more than its embarrassment, intimated to the President of the United States, 'Your Great White Fleet is most welcome to call at Australian ports'. And so it came to Sydney and to Melbourne, and to Auckland in New Zealand.<sup>3</sup>

In Sydney, the arrival of 16 glamorous ships was an extraordinary sight. It was estimated that 650 000 people—more people than lived then in the city—lined the shores of the harbour. Some athletic people even perched on the roof of the Watson's Bay street-trams in order to reach a vantage point.<sup>4</sup> American sailors walking the streets were welcomed as brothers. The brilliant naval spectacle accounted for part of the impact. There was also a widespread public feeling that if Japan became a mighty naval power and tried to expand south towards Australia, the United States might rally to Australia's defence. Several Australian newspapers argued that Britain, while ostensibly the master of the world's seas, could not, in the event of a great war, defend its own supply lanes near the British Isles and at the same time release a smaller fleet to defend Australia. In Australian eyes, the United States was viewed as a potential lifesaver in this era of intense naval rivalry. Nobody could conceive that when the Pacific War began in December 1941, air power would be vital.

So here is a country with distinguishing characteristics. For a very long period, Australia remained a close ally of Britain. Whenever Britain went to war and needed help, Australia gave help. The first war in which Australia did not fight alongside Britain was the Vietnam War in the 1960s. By then, our relationship with the United States, formed in the perilous southern summer of 1941 and 1942, was firm and well tested.

We like to think that the alliance really began in in December 1941 when the Prime Minister of Australia, John Curtin, formally asked the United States for help. He did but the United States was already sending help. Soon after

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3 Gordon Greenwood & Charles Grimshaw (eds), *Documents on Australian International Affairs 1901–1918*, Nelson, West Melbourne, 1977, pp. 171–176

4 *ibid.*, p. 175.

the Philippines was attacked late in 1941, the Japanese by then controlled the West Pacific in the air and in the sea. There was no chance of safely sending reinforcements from the United States to the Philippines. General Eisenhower, then not so important, in Washington, decided that a convoy of reinforcements already on its way to the Philippines 'must go to Australia', and it arrived in Brisbane in December 1941. The great alliance was being formed, without formal treaties, without even a meeting of leaders.

This year we will be commemorating the beginning of World War I and the momentous events of 1914–18. Some historians now say that it is regrettable that Australians took part in that war. Admittedly it was, at first, essentially a war between European powers, but they had their colonies and some of their fighting forces in the West Pacific. Germany had a naval base close to north-east Australia.

Britain's Navy was no longer so dominant in this part of the world. The Germans had defeated the French in the Franco-Prussian War, besieged Paris in 1871 and, to the humiliation of the French, the Germans were triumphant. They then set out to obtain colonies in east and south-west Africa and in islands of the West Pacific. Part of the present territory of Papua New Guinea was annexed by the Germans; the north-east coast of New Guinea, New Britain, New Ireland and Bougainville all became German possessions. Nauru, the phosphate island near the equator, became a German possession. Western Samoa became a German possession. A German naval base was even built in the north-east of China, the present Qingdao. So in mid-1914, when a major European war seemed inevitable, Australia was certain to be involved.

Australia was a maritime nation. All its major exports went to Europe, by sea. Naturally, Australia depended heavily on the Royal Navy for its ultimate defence. Australia by then had created its own Navy and bought one dreadnought, the most powerful class of warship of the era. It had introduced compulsory military training, and was spending on defence a higher proportion of its government expenditure than most of the countries in Europe, but it could not necessarily defend itself alone if naval war extended to the Pacific.

The first Australian casualties of World War I were not at Gallipoli in 1915 but in German New Guinea in 1914. Australia sent a naval expedition north to German New Guinea and captured Rabaul and destroyed the important German wireless station. The Australian and New Zealand navies captured other German possessions in the South Pacific while Japan—an ally of Britain in World War I captured those north of the equator. The Germans had a very sizeable naval fleet in the Pacific at that time—no foreign observer knew exactly where it was—and it could have done immense damage to Australian shipping and ports, with the aid of the vital element of surprise.

One of our great national days is Anzac Day. It commemorates the expedition which landed on the Turkish shores near the Dardanelles on 25 April 1915. Turkey then was an ally of Germany and Austria. The British and the French supplied the largest number of invading troops, and the British and French navies were all-important in transporting them. French colonial troops were present, troops were there from British India, and Australians and New Zealanders landed in large numbers.

Gallipoli is now viewed as a needless campaign by some historians but it began with high hopes. The attempt to capture the Dardanelles—the narrow Turkish strait between the Mediterranean and the Black Sea—was based on the idea of invigorating Russia's war effort. Russia, Britain and France were allies in 1914, but Russia was the weakling. There were months when the Russian Army, fighting against Germany and the Austro-Hungarian Empire on the Eastern Front, was short of ammunition and seriously short of rifles and machine guns.

The original aim of the Gallipoli campaign was to open the Black Sea to Allied shipping. The belief was that, if Turkey could be knocked out of the war and Allied ships could enter the Black Sea, their military cargoes could re-equip Russia's Army, the largest army in the world. If the Russian Army fought more strongly it would force Germany to divert, to its Eastern Front, valuable troops from the Western Front where it almost besieged and certainly threatened Paris. The Gallipoli campaign failed. The invaders withdrew at the end of 1915. World War I developed into a gruelling campaign. The firepower of the new weapons was so enormous that it was virtually impossible for armies to advance in open ground without suffering massive casualties. So it became a war of the trenches and year after year the trenches remained there, stretching across Europe, and it seemed almost impossible to break through the enemy trenches. Eventually, the war ended in 1918.

Aviation became prominent but not crucial in World War I. Certainly the brave aviators in their flimsy aircraft, especially on the Western Front, could look down on the enemy's positions and see where the big guns were placed and where new fortifications were being built. They brought back valuable information but they were not all-important. German twin-engined aircraft bombed London. In 1918, boxes of urgently needed ammunition were landed by parachute near Hamel where John Monash the Australian General was preparing a coordinated attack on the German armies.<sup>5</sup> Of more significance, the first makeshift aircraft carriers were tried out, but did not yet influence warfare. The range of the best aircraft was still small, and they could not venture far out to sea before their petrol tanks warned that it was time to return. In 1918, Britain owned the world's largest air

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5 Les Carlyon, *The Great War*, Macmillan, Sydney, 2006, p. 644.

force with almost 300 000 men, mostly on the ground, and some of her most experienced pilots were Australians. Even Australia had its own Flying Corps.

In 1918, at the end of World War I, only a few strategists could foresee that military aviation would become all-important. But in the 1920s, suddenly, the potential of aviation was increasingly realised. Most of the pathfinding airmen of the 1920s had been young wartime pilots. Australians, being so far away from the world's power points, were amongst the first to see that potential.

Many of the important crossings of difficult seas and oceans in the 1920s were made by Australians. Most of them received very little support from the Australian Government. The most famous was Charles Kingsford Smith, who with Charles Ulm was the first to fly from the United States to Australia and the first aviator to reach New Zealand crossing the Tasman. He depended on a Californian businessman for what was considered the most difficult aviation feat in the world up to that time, to fly from Honolulu to Fiji. He achieved it in his three-engine plane, the *Southern Cross*. A generous Californian businessman gave him the last part of the money. The Australian retail stores were generous providers to those early flights. Sidney Myer of Melbourne financed part of Kingsford Smith's flights and Hordern's of Sydney, another famous retailer, financed some of those early flights. The first flight across the South Atlantic from Brazil to Africa was made by an Australian, and the first flight to Antarctica was by an Australian. For a small country, the number of Australian aviation feats is remarkable. Somehow, people here realised that aviation was vital.

It was in 1928, I think, that that remarkable organisation, the Royal Flying Doctor Service was set up with, at first, a Qantas plane in north-west Queensland, flying an injured miner to the nearest hospital. Half of Australia is now covered by the Royal Flying Doctor Service.

Australians realised that aviation was important but Australia did not spend heavily on aviation between the two world wars. The country was divided. One half of Australians believed that the world would remain a troublesome place and Australia needed a strong army and a strong navy and, if possible, a strong air force. However, a sizeable minority of Australians believed that the country should become isolationist and should take no part in wars. Indeed, there was very little public interest in defence expenditure at election times in the 1920s and most of the 1930s because the public was so divided.

Australia entered World War II in 1939, on the brink of building an adequate air force but slightly too late. It was remarkable that in 1934 when BHP (Broken Hill Proprietary Company) was essentially a small steel maker in Newcastle by world standards—now it is the biggest mining company in the world under the name of BHP Billiton—the head of BHP went overseas every two or three years to see what other steelworks were doing and what steel users were doing. BHP was then

so small that he was welcomed into steelworks and shown the latest processes. He learned everything he wanted to learn and he filled his notebooks with details.

In 1934, the then head of BHP, Essington Lewis, went to Japan. How leisurely 1934 was; of course, you did not fly to Japan then. Lewis took the steamship from Sydney. It called at Brisbane, it called at Townsville, it called at Cairns, it called at Thursday Island, port after port along the way to China and then eventually he reached Japan. He went to the steelworks and the shipbuilding yards—he was not allowed into the aviation factories. And he suddenly woke up: here was a country believed to be a second-rate manufacturer, secretly becoming a first-rate manufacturer.

When Lewis came back to Australia he said privately and in conversations with the Australian Government, ‘They are armed to the teeth’. He was impressed by the Japanese capacity to mass-produce aircraft.<sup>6</sup> In this belief he was then in a minority. On the eve of the Pacific War in 1941, so many British military leaders, even those high in the Royal Air Force, were convinced that Japan could never be a great air power. There was even a superstition that Japanese aviators could not fly safely and efficiently at night!

Some of you will know that Japan—then fighting in China and capturing one third of the country—used several, but not many, of its best aircraft; and one of them was shot down. It was probably a Mitsubishi Zero. The engine or at least parts of the engine were sent to Britain for examination and the verdict of experts was that it could not have been made in Japan; it must have been made somewhere else, perhaps in the United States. In fact, the Japanese were building hundreds and hundreds of these first-class aircraft.

I am old enough to remember Christmases in the late 1930s. When you received toys in your Christmas stocking, many of them were made cheaply in Japan. Those little cars, those little locomotives were wonderful on Christmas Day, but somehow they were broken by Boxing Day. Japan was seen as a second-class manufacturer.

After Essington Lewis came back to Australia, he persuaded other businesses with operations to band together to begin to make military aircraft at Port Melbourne; they included the silver-lead smelters at Port Pirie, General Motors who were making or assembling cars in Australia, the Orient Steam Navigation Company, and Broken Hill Proprietary Limited as leader and largest shareholder. The first model, the North American Aviation NA-33, was a trainer but some said it was *almost* a fighter and certainly a general purpose aircraft. Australians flew the first plane in March 1939. If they had begun that manufacturing project 18 months

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6 Geoffrey Blainey, *The Steel Master: A Life of Essington Lewis*, Macmillan, South Melbourne, 1971, p. 122.

earlier, they probably would have been making first-class military aircraft by December 1941 when the Pacific War began.

The Australian plane was called the Wirraway. It carried a crew of two, and had three machine guns. With a 600-horsepower engine, it was not fast enough to compete with the Japanese fighter aircraft, the Zero, and its 940-horsepower engine. By the end of 1941, a total of 488 Wirraways had been built, and they provided most of Australia's first-line aircraft. A squadron reached Singapore, and there was rejoicing for they could match most of the British fighter aircraft stationed there. When the Pacific War broke out, however, they showed that they were neither fast nor well-armed. They were succeeded by the Boomerang fighter, which was almost as fast as the Zero and equipped with two cannons as well as four machine guns. The first of the 250 Boomerangs, built in the fast-expanding aircraft factories, were handed over to the Royal Australian Air Force in August 1942.

It is astonishing to review the events of the first months of the Pacific War and to see how remarkable was Japan's mastery of military aviation. At the start of 1941, who would have believed that towards the end of that year a great Japanese fleet of locally built aircraft carriers—Japan then possessed more aircraft carriers than any other nation—was setting out in complete secrecy for the vicinity of the United States Naval Base at Pearl Harbor? So on 7 or 8 December 1941 (depending whose calendar is used) they bombed Pearl Harbor and the naval base and the mighty American battleships docked there. It was a remarkable victory, in the short term.

Almost as remarkable, but not part of our collective memory or folklore, is that the Philippines was bombed later the same day. General Douglas MacArthur was in charge of defending the Philippines. His staff heard the news, first on commercial radio, that Pearl Harbor had been attacked, and so MacArthur promptly sent most of his planes into the air for fear that the Japanese fighters and dive-bombers might appear overhead in a surprise raid, and destroy or damage the American planes neatly assembled on the ground. The American aircraft were circling in the air for quite some time before they returned and landed. Then the word began to come through to Manila and Clark Field that big numbers of strange aeroplanes were coming from the direction of Taiwan or Saigon; they certainly were. The postmasters in the Philippines were sending telegraph messages, 'Strange planes overhead'. Somehow the messages were lost or misunderstood, as messages often are in war. Suddenly appearing overhead, the Japanese raiders did enormous damage. In some ways, the war in the Philippines was over at the end of that week. The United States kept on fighting until May

1942 but they had long lost supremacy in the air and even the ability to defend any of their convoys that might try to bring help from San Francisco or Honolulu.<sup>7</sup>

The same chain of aerial defeats happened in Malaya and Singapore. Britain decided to send a naval force to Singapore, just before the Japanese entered the war. One aircraft carrier was to be part of that force but she ran aground in the West Indies and did not arrive. Instead, two great battleships, HMS *Prince of Wales* and HMS *Repulse*, steamed into Singapore Harbour on 2 December 1941. There was rejoicing, with many defence experts exclaiming, 'If there's a war with Japan, we'll be protected'. Meanwhile, the Japanese had begun to invade the northern part of Malaya; it was actually one hour and 35 minutes before they bombed Pearl Harbor, but alertness was in short supply.<sup>8</sup>

The *Prince of Wales* and the *Repulse* sailed north to intervene. They were spotted by Japanese submarines and reconnaissance planes. The British battleships had no air support, not one plane. Suddenly, in bright daylight they were attacked by Japanese torpedo bombers and destroyed. When the news reached Churchill in London that those ships had been sunk, he himself was sunk in gloom.

Historians often conclude that the naval base at Singapore, from its inception, was a disaster in waiting, but they forget that when the base was planned in the 1920s air power was not seen as decisive. And when the naval base was completed the faith remained strong that, in Europe, Britain and France would be loyal allies and that their navies would dovetail one another. Accordingly, if Germany went to war again, as it did in 1939, Britain and France would be so strong at sea that French ships could control the European sea lanes while a large part of the British Navy raced, if necessary, to Singapore to keep the Japanese at bay.<sup>9</sup> Likewise, the combined strength of British and French Air Forces would, in normal circumstances, allow aircraft to be diverted from Europe to any new South-East Asian theatre of war.

The speedy fall of France in 1940, and the loss of the French Navy, was one of the great events in military history. That triumph by Hitler was really a crucial step in the fall of Singapore. The Allied soldiers—the Australians, the British and the Indians fighting in Malaya and in the last days of Singapore—had no air support. The planes already there in December 1941 were Brewster Buffalos from Europe and Wirraways from Australia, and both were outclassed. The fall of Singapore and swift advance of the Japanese elsewhere on land and sea—one of the most

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7 Geoffrey Blainey, *A Short History of the 20th Century*, Ivan R Dee, Chicago, 2006, pp. 152–155.

8 Brian L Hill, *Wirraway to Hornet: A History of the Commonwealth Aircraft Corporation Pty Ltd, 1936 to 1985*, Southern Cross Publications, Melbourne, 1998, p. 67n.

9 Blainey, *A Short History of the 20th Century*, p. 153.

brilliant military campaigns in recorded history—depended heavily on command of the air.

There may never be a military campaign like it on land and air and sea. It began on 7 December 1941. By the end of February 1942, Japan had this remarkable series of military victories. They were far into Burma, which then was an oil producer. They had captured Malaya, a great source of tin and rubber, so important in war. They were about to completely conquer the Dutch East Indies, a great source of petroleum. At the end of January, they had captured Australian territory, Rabaul, in the old German New Guinea. They moved on and on. Singapore fell on 15 February 1942. Four days later the Japanese bombed Darwin, twice in the one day, utilising the same aircraft carriers which had taken part in the attack on Pearl Harbor two months previously. Although just a small town, Darwin by then had become a naval and air base, the most important in the northern half of Australia. The Japanese had a striking victory by bombing the record assembly of British, Australian and American ships at anchor there and the armed aircraft also taken by surprise as they stood on the runways.

So air power proved yet again its importance. Back in 1930, if anyone had said that these events would happen, partly or largely due to air power, they would have been told emphatically, 'It's impossible!' But the dramatic events happened, and Japan was the unexpected conductor of this 'symphony of triumph'.

Albert Einstein was living on Long Island in 1939 and 1940, the famous physicist and a Jew who had left Nazi Germany. He wrote a letter to the President of the United States and said, 'There are new developments in nuclear warfare that maybe the United States should take advantage of'. And he said, 'The chances are that a powerful weapon, more powerful than anything ever seen, could be created, and it might have decisive effects in war'.

The British were well ahead of the United States at that time in nuclear research but, once the United States entered the war in December 1941, it became the leader in the hazardous and slow task of devising effective nuclear weapons.

Einstein in his letter said, in effect, 'This atomic bomb, if we ever develop it, will be very heavy and it can only be carried by a ship to its destination'. 'If it's ever to be used,' he implied, 'you will need sea power'. And at last came that extraordinary event of August 1945 when the United States dropped the first atomic bombs on those two Japanese cities, and they were not carried to those cities in a warship. They were each carried by heavy bombers of a size which, at the end of World War I, had been quite inconceivable.

I must conclude. It is a remarkable story, the short history of military aviation. If I could offer a simple message, it is this: and I make it primarily in response to those analysts and political commentators who say today, 'Wars are terribly damaging. We must not take part in them. If there's a major war, we must be neutral'.



Similarly, distinguished British historians argued recently that Britain should not have entered World War I. It was primarily, they add, in its own political and economic interests to remain neutral. I find that a remarkable argument. You can only be neutral by consent.

It can be pointless for a nation to proclaim, 'We're going to be neutral'. The potential enemy has to accept and honour this decision. As I argue elsewhere, Sweden and Switzerland have been neutral for well over a century 'not only because they chose neutrality but because warring nations permitted them to remain neutral'.<sup>10</sup>

If Britain had not entered the war in August 1914, it would have been forced to enter the war later, either of its own volition or by enemy action. The United States proclaimed its neutrality at the start of both world wars but two or three years later it was forced to take part in the fighting, and not at a time of its own choosing.

There was a loud and influential Australian cry in the 1930s, especially but not solely on the left, 'We're going to be neutral. Luckily we're far away. Therefore don't let us spend too much on our defences'. The Australian Government did not subscribe to it, but it did not dare raise the taxes needed to finance a large modern air force. Public opinion would have prevented the use of such taxes. It is sad to say this but many of the Australians who were captured and interned as prisoners of war after the fall of Singapore in February 1942—and there were some 24 000 of them—were captured partly because their country had been unable to equip them adequately with both ground and air support.

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10 G Blainey, *The Causes of War*, Third Edition, Macmillan, South Melbourne, 1988, p. 292.



# **THE ADVENT OF AIR POWER 1914–1938: A REVOLUTION IN MILITARY AFFAIRS?**

**PROFESSOR JOHN MCCARTHY**

The conference organisers suggested I should consider the significance and role of military air power from the start of World War I in August 1914 to 1938, and in doing so make reference to the Australian experience. In September 1938, Nazi Germany used the Luftwaffe as an effective diplomatic weapon to force Britain and France to give Czechoslovakia no choice but to cede the highly defensible Sudetenland frontier to the Third Reich. Some might consider this was a misguided policy. It was a major factor leading to the outbreak of what was to develop later into World War II. Australia, fully consulted, was part of it.

A remarkable result for the military influence of air power considering the first powered heavier-than-air flight only took place in 1903. I can only ask and try to answer some questions. The main question stated in its simplest form might be: how did this new weapon affect military thinking between 1914 and 1938?

The advent of air power: ‘Bliss it was that dawn to be alive, but to be young was very heaven.’ Thus did William Wordsworth, the poet, welcome the French Revolution of 1789. Nothing to do, you might say, with a conference devoted to 100 years of military aviation. The thoughts might be pertinent though. The French Revolution changed the nature of Western politics forever. The advent of air power promised to change forever the whole basis of military/political thinking. Brought about by a massive advance in technology, for some it constituted a major change in the nature of warfare. For some it heralded, to use a term now perhaps out of style, a revolution in military affairs.

Wordsworth was a romantic. Bliss for an aviator between 1914 and 1918 was to remain alive. In France, life expectancy for Royal Flying Corps (RFC) flying members was about three weeks—nothing romantic there. Some were more skilful or luckier, or both. Consider Albert Ball. In France as a pilot from February 1916 he destroyed 44 enemy aircraft. He was awarded the Military Cross (MC) and the Distinguished Service Order (DSO) and two Bars, followed by a Victoria Cross (VC). Just 20 years old, he survived for 15 months before being killed on 7 May 1917. More fortunate, simply because they survived, were two airmen who later each became RAAF Chief of the Air Staff (CAS). George Jones, CAS between 1942 and 1952, joined the Australian Flying Corps (AFC) as a mechanic, was commissioned as a pilot and at the war’s end had destroyed seven enemy aircraft and had been awarded the Distinguished Flying Cross (DFC). He told me

his flying suit was often soaked in petrol! Not surprisingly, he suffered from some form of post-traumatic stress for the rest of his life.<sup>1</sup> Sir Donald Hardman, an RAF officer, replaced George Jones as CAS. Just 17 and a half years old, he joined the RFC in May 1917 straight from his public school. By the end of the war, he had destroyed nine enemy aircraft, had become a flight commander and had been awarded the DFC. During conversation in the late 1960s, he wondered still how he had survived.<sup>2</sup>

By the end of the war, the British had suffered 16 623 flying casualties and the Germans 16 054. Nothing like the number, of course, of those killed in the land fighting. On 22 August 1914 the French lost some 27 000 dead, and 20 000 British infantry were massacred mostly in the first hour of the Somme offensive 1 July 1916. Material air losses though were heavy. The Germans lost 56.9 per cent of all aircraft produced, the British 61.8 per cent.<sup>3</sup> That a future air war might be expensive in both material and in lives was one conclusion which might have been reached from the experience of 1914–18.

In 1990, in a series of seminars instigated by the then CAS, Air Marshal Ray Funnell who is with us today, Air Commodore Ian Westmore argued that most contemporary air power capabilities were available one way or another in World War I. The technology some 24 years ago, as is now, was naturally vastly different from that of 1914–1918 but the fundamentals of employing air power were established in those four years; an instance of learning while fighting. The Ian Westmore thesis has since been developed by others.<sup>4</sup> For me, it was heard here first.

There was observation and reconnaissance, today perhaps called surveillance. On the Western Front where artillery and infantry dominated the battle, this was the primary task of air power. By late 1917 primitive air-to-ground wireless meant that information could be relayed to the guns in close to real time. Is the delivery of precision guided munitions still so dependent; is time sensitive targeting also contingent on such information? Aerial photography meant supply and lines of communications could be identified and made open to attack. Granted often difficult to implement, interdiction is regarded today as an air strategy. The task

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- 1 Peter Helson, *The Private Air Marshal: A Biography of Air Marshal Sir George Jones, KBE, CB, DFC*, Air Power Development Centre, Canberra, 2010; and interview with Sir George Jones, 1973.
  - 2 Interview with Sir Donald Hardman, 1968.
  - 3 Robin Higham, 'Air power in World War I, 1914–1918', Alan Stephens (ed.), *The War in the Air 1914–1994: The Proceedings of a Conference Held by the Royal Australian Air Force in Canberra, March 1994*, Air Power Studies Centre, Fairbairn, 1994, pp. 32 & 34, fn. 14.
  - 4 See in particular Tami Biddle, 'Learning in real time: the development and implementation of air power in the First World War', Sebastian Cox & Peter Gray (eds), *Air Power History: Turning Points from Kitty Hawk to Kosovo*, Frank Cass, Abingdon, 2002, pp. 3–20.

of gathering and relaying information led to the need to control the air. Dedicated fighter aircraft thus evolved. Air fighting had little rationale other than to make the skies safe for observation aircraft. Might this be called a form of combat air patrol today?

From at least 1916, aircraft flew in direct support of infantry. The Germans developed a dedicated all-metal ground attack aircraft for this purpose. The first battle of Cambrai in 1917 saw RFC aircraft operating with tanks. On the Western Front by 1918 this development with tanks and infantry had become an accepted mode of land warfare, forerunner perhaps of Wehrmacht and Luftwaffe cooperation in 1940 and the later Soviet land/air battle doctrine. In 1915, with the lighter-than-air Zeppelin, the Germans introduced strategic air attack on urban areas and from May 1917 continued it with the formidable Gotha and Giant bombers. One main purpose in forming the Royal Air Force (RAF) on 1 April 1918 was to attack German cities with bombers capable of reaching as far as Berlin and back from British bases. Such strategies pointed directly to the World War II air offensives against Germany and Japan. As Christina Goulter has shown, and she also is with us here today, the Royal Naval Air Service (RNAS) developed advanced technology in weapon design and navigational aids. Torpedo carrying aircraft attacked merchant shipping and from May 1917 to November 1918 evidence suggests at least nine German submarines were sunk by aircraft. By mid-1918 the Royal Navy was operating 14 primitive aircraft carriers.<sup>5</sup> Such developments looked forward to the employment of aircraft in the vital World War II Battle of the Atlantic and of course in the naval-air war in the Pacific.

Did this collective employment of air power between 1914 and 1918 suggest a revolution in military affairs? The August 1917 Smuts Report, commissioned to consider the air defence of Great Britain, reached a conclusion:

And the day may not be far off when aerial operations with their devastation of enemy lands and destruction of industrial and populous centres on a vast scale may become the principle operations of war, to which older forms of military and naval operations may become secondary and subordinate.<sup>6</sup>

If so, the land frontier previously vital in determining a state's security would become irrelevant. Were the capital ship to prove vulnerable to air attack, battleships would become obsolete and the core of a navy's perceived force

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5 Christina JM Goulter, *A Forgotten Offensive: Royal Air Force Coastal Command's Anti-Shipping Campaign, 1940–1945*, Frank Cass, Abingdon, 1995; and 'Review of air situation and strategy for the information of the Imperial War Cabinet by the Chief of the Air Staff', 27 June 1918, printed in *Air Power Review*, Special Edition, Spring 2013, pp. 176–190.

6 Smuts Report, 'Air Organisation and the Direction of Aerial Operations', 17 August 1917, quoted in H Montgomery Hyde, *British Air Policy Between the Wars, 1918–1939*, Heinemann, London, 1976, p. 31.

projection severely threatened. Also threatened would be a worthwhile army or naval career. If the advent of air power meant a revolution in military affairs, this aspect alone meant it was not likely to be a peaceful one.

Between 1914 and 1918, however, no war industry had been crippled from the air and the outcome of no major land or naval battle had been decided by either the control of the air or lack of it. Air power may have been proven as necessary but hardly sufficient for success. Importantly for a state which relied upon sea power for its defence, and Australia was one of them, no aircraft in the 1914–18 conflict sank or seriously disabled any major naval vessel.

In optimum conditions, though, it could be done. In 1921 the American Brigadier General Billy Mitchell sunk, among other ships, the anchored and undefended and supposedly unsinkable ex-German battleship *Ostfriesland* by hitting it at low level with six 2000-lb bombs. The conclusion reached by American naval officers observing this exercise was ‘... aircraft had the power to sink or seriously damage any naval vessel at present constructed.’<sup>7</sup> British trials were less spectacular. From them, however, the inference was that a capital ship subjected to capable air attack could have its ‘fighting efficiency’ seriously impaired.<sup>8</sup> Some 20 years later such opinion was more than validated. On 10 December 1941, Japanese bombers and torpedo bombers operating from bases in Indochina, 400 miles distant, took just over an hour and for the loss of just three aircraft to sink the 1917 battlecruiser *Repulse* and the 1938 state-of-the-art battleship *Prince of Wales*.

In the inter-war years for navies, however, the advent of air power failed to conjure up a vision of a revolution in naval affairs let alone in military affairs generally. For the Royal Navy the capital ship, the battleship, continued to constitute the kernel of sea power. Despite leading the world in carrier-borne aviation, a main fleet action between capital ships formed the basis of Japanese naval strategy. Although the American *Lexington*-class carriers were entering service from 1927, the USN Battle Force at Pearl Harbor in 1939 consisted of five carriers and 12 battleships. It was not until 1944 that the predominance of the battleship formally passed. As Samuel Eliot Morison put it:

... when *Mississippi* discharged her twelve 14-inch guns at *Yamashiro*, at a range of 19,790 yards, at 0408 October 25, 1944, she was not only giving that battleship the *coup de grâce*, but firing a funeral salute to a finished era of naval warfare.<sup>9</sup>

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7 National Archives (London) Air 9/26 (2) contains the American Joint Board Report 349, 18 August 1921.

8 Stephen Roskill, *Naval Policy Between the Wars, Volume I: The Period of Anglo-American Antagonism 1919–1929*, Collins, London, 1968, pp. 247–249.

9 Samuel Eliot Morison, *History of United States Naval Operations in World War II: Volume XII – Leyte, June 1944 – January 1945*, Little, Brown and Company, Boston, MA, 1966, p. 241.

Australian consequences may have followed from this delayed conclusion.

In March 1942, Australia entered into a period of great crisis. After the fall of Singapore Australia appeared to face the reality of a Japanese invasion. Tempting perhaps to think that by 1942, if Australia had developed its air power at the expense of its naval power and subsequent reliance on the Royal Navy, it would have been reasonably self-reliant and secure from Japanese attack. As early as January 1911, the Australian nationalist journal *The Lone Hand* urged that this embryonic weapon system, which we now call air power, should constitute the country's first line of defence. That early, Japan was seen as the danger and, as it was argued, aircraft could be quickly built and made ready for immediate deployment. No mention by *The Lone Hand* of the infrastructure required to maintain an air striking force. There were only four licensed pilots in Australia, no trained mechanics or riggers, no ground installations, no training facilities. Not for the last time was it thought an air striking force could be easily got. It rarely, if ever, is.

In the inter-war years and principally in the 1930s the Australian Labor Party then led by John Curtin endorsed a policy which recalled the simplicity of the 1911 thinking. By 1937 Curtin in opposition urged the establishment of a £15 000 000 fifty-squadron air force. Again the infrastructure required to operate a fifty-squadron air force was not considered. In 1937 there were only two RAAF Flying Training Schools. There were no specialised gunnery, wireless or navigational training facilities. Operational training units had not even been heard of, air bases were few and this at a time when the total Australian Defence vote for 1937–38 was just £9 773 505. Archdale Parkhill, the Australian Minister for Defence, argued in reply that the cost of operating a fifty-squadron air force would have been close to £30 000 000. This may have been a conservative estimate. In Britain the question was raised: how many strike aircraft could be considered operationally ready for the cost of a £10 000 000 battleship? Surprisingly, the committee set up to examine this question found that when all possible factors were considered—training, length of life, deterioration, capital and maintenance costs—the cost of a battleship equalled the cost of operating just 43 twin-engine bombers.<sup>10</sup>

So what status did the 1917 Smuts argument achieve by 1938 that air power could well become the principle weapon of war? In 1925 the respected military commentator Basil Liddell Hart asked the question: 'Are armies and navies obsolete?'<sup>11</sup> In America some years later and with the arrival in 1937 of the B-17 the thought arose in some minds that this aircraft could substitute for sea power

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10 Admiral of the Fleet Lord Chatfield, *It Might Happen Again: Volume II – The Navy and Defence, The Autobiography of Admiral of the Fleet Lord Chatfield*, Heinemann, London, 1947, pp. 98–101.

11 BH Liddell Hart, *Paris or the Future of War*, EP Dutton, New York, NY, 1925.

in the defence of the American coasts. It was not to be. From the early 1920s the RAF was increasingly substituting for the Army in policing British mandates created out of the defeated Ottoman Empire. Iran was one of them. Aircraft also largely replaced land punitive expeditionary forces to subdue recalcitrant tribesmen on India's Northwest Frontier.<sup>12</sup> Former times echoed partly in more recent policy perhaps?

The weapons employed in such operations ranged from machine guns, to high explosive bombs, to delayed action bombs and a kind of cluster weapon. Non-lethal but painful gases were used, together with liquid fire and phosphorous. Tribesmen and their families depended on herded animals for subsistence. These herds were attacked from the air.<sup>13</sup> What happened in the past surely has importance today. Should one be surprised to find a less than enthusiastic support for Western interests now among certain non-Western peoples?

Australian aviation had a more humane and civilian function. The non-military Flying Doctor Service, for example, provided medical care for the deep outback. The RAAF pioneered air routes and surveyed inhospitable land. But the substitution policy of employing air power for other forms of military power had a local version. In March 1932, Air Vice-Marshal Richard Williams, the Chief of the Air Staff, suggested aircraft could replace the fixed-gun coastal defences. Rejecting entirely the idea that aircraft alone could defend Australian ports, the Army was not impressed. Quickly, and at the expense of equipping its field formations, it made the restoration of guns set in concrete its primary task. The Army went further and wanted five Army cooperation squadrons to operate with the guns. If the advent of air power had brought about a revolution in military affairs the Army clearly wanted little part of it. Williams though was sharp. Realising the Army or Navy would not admit to any role for the RAAF other than auxiliaries for their respective Service, he decided the so-called Army cooperation squadrons would in fact be trained for something quite different, mainly fighter operations.<sup>14</sup>

Was the advent of air power destined only to lead to such inter-Service squabbles? For this new weapon, squabbles were not central to what Smuts had in mind. Correct targeting is crucial to the successful application of strike and, to use his words, the application of air power should lead to the '... devastation of enemy lands and the destruction of industrial and populous centres'.

In the inter-war years the main theoretician of this form of strategic air attack was the Italian, Giulio Douhet. To reduce the Douhetist thesis to its basic terms, the

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12 Dr James S Corum, 'The myth of air control: reassessing the history', *Aerospace Power Journal*, vol. XIV, no. 4, Winter 2000, pp. 61–77.

13 Michael Paris, 'Fiction of imperialism', *History Today*, vol. 63, no. 5, May 2013, p. 33

14 John McCarthy, *Australia and Imperial Defence 1918–1939: A Study in Air and Sea Power*, University of Queensland Press, St. Lucia, 1976, p. 71.



centre of gravity in an industrial society was the fragility of civilian morale. Thus the civilian population should be subjected to ferocious and unrelenting air attack. High explosive would open buildings for incendiaries, poison gas would hamper firefighters and rescue operations. For Douhet, the outcome of such an assault was inevitable. He argued: 'A people who are bombed to-day as they were bombed yesterday, who know they will be bombed again to-morrow and see no end to their martyrdom, are bound to call for peace.'<sup>15</sup>

Sir Hugh Trenchard, RAF Chief of the Air Staff, independently of Douhet, was attracted to a similar idea of employing air power. Before becoming CAS he commanded the bomber force which in 1918 was designed to attack German towns and cities. In 1923, a war with France was considered possible. For Trenchard, the outcome would be decided by which population could best withstand aerial bombardment. In 1928 he produced a memorandum on *The War Object of an Air Force*.<sup>16</sup> There, he drew a questionable distinction between attacking industrial workers and the civilian population as a whole. Scholarly differences must be acknowledged but surely Trenchard had the thought of an all-out onslaught upon civilians in mind. He argued:

There may be many who, realising that this new warfare will extend to the whole community the horrors and suffering hitherto confined to the battlefield would urge that the Air offensive should be restricted to the zone of the opposing armed forces ... it is not feasible ... all available weapons always have been used and always will be used.

...

... there is not the slightest doubt that in the next war both sides will send their aircraft out without scruple to bomb those objectives which they consider the most suitable.<sup>17</sup>

Are we close now to a proposed revolution in military affairs? Clausewitz had postulated: '... the destruction of the enemy's force underlies all military actions; all plans are ultimately based on it ...' For strategists such as Douhet and Trenchard, the advent of air power shifted the centre of gravity, a term from Clausewitz himself, away from the fielded armed forces to the civilian population. The prediction was that governments would be forced to accept defeat after finding it impossible to function as a result of civilian terror. In the 1930s, bomber

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15 See John McCarthy, 'Douhet and the decisiveness of air power', Hugh Smith (ed.), *The Strategists*, Australian Defence Studies Centre, Canberra, 2001, p. 68.

16 Sir Charles Webster & Noble Frankland, *The Strategic Air Offensive Against Germany 1939–1945: Volume IV – Annexes and Appendices*, Her Majesty's Stationery Office, London, 1961, Appendix 2, pp. 71–76.

17 *ibid.*, pp. 75–76.

aircraft, the instrument of terror, seemed invulnerable. As Stanley Baldwin the British Prime Minister argued in 1932, there was 'no power on earth' which could protect the civilian population from aerial attack. Survival, he said, simply would depend on killing more women and children quicker than the enemy. Horrendous prophecies followed. In 1938 the British Air Ministry calculated that 65 000 civilian casualties each week would be caused by air attack.

Only the advent of air power made it possible for the head of a 'civilised' government or fighting service to advocate a direct attack on defenceless civilians while remaining immune from being regarded as insane and therefore unfit to hold office or command. But such a concept had a hard sensible logic. Created by the industrial revolution, there existed a large and exploited European urban underclass. The crucial question was: did this class have a loyalty to the state?

Before World War I, Europe experienced considerable industrial/political disturbance. Marxism with its message 'workers of the world unite, you have nothing to lose but your chains' presented a growing ideology. Working-class organisations, to use an old-fashioned term, such as The Industrial Workers of the World had the objective of destroying the power of the ruling class. Anarchists refused to recognise any state authority. There was the Russian Revolution of 1905, a forerunner of the Russian Revolution of 1917. Yet between 1914 and 1918 this working class fought and died for their version of God, King, and Country. After being subjected to air attack, would they continue to do so again?

In 1918 British returned servicemen were promised 'A Land Fit for Heroes.' What they got was unemployment, neglect, hardship and poverty. In 1926 Britain experienced its first general strike. It was broken by the Government inside 10 days. Miners were locked out. They were forced back finally by hunger after being forced to accept even more abysmal working conditions, including lower wages and longer working hours. It was not only the British working class who were disillusioned. In February 1933 the prestigious Oxford University Union carried a resolution by 275 votes to 153 that 'This house will in no circumstances fight for its King and Country.'

In Germany there was defeat, civil war, and massive inflation which among other things destroyed savings. A brief Marxist government was formed in Bavaria. In Hungary a short-lived soviet republic was created. Adolf Hitler led the 1923 Munich Putsch aimed at overthrowing the Berlin democratic government. For the whole of Europe there was the economic depression of the 1930s. Again it was misery for the working class. In France there were hardly any social services and an anti-Fascist left-wing government led by Leopold Blum was destroyed by the extreme right wing with their slogan 'Better Hitler than Blum.' France was a critically divided society and it surrendered to Nazi Germany inside six weeks in 1940. Why it collapsed so quickly is a question often asked. Perhaps the proper question should be: how did France manage to go to war at all?

If, as argued, the successful application of strategic air power is dependent upon selecting vital critical targets, then in 1938, as brutal as it must seem, this fractured civilian morale appeared to present such a target.

Another, and related, question. In 1864, prior to burning Atlanta during the American Civil War, General Sherman argued: 'War is cruelty and you cannot refine it'. Did the advent of air power, as strange as it might seem, envisage a certain possible refinement of the cruelty inherent in war? A central premise of the strategic air attack theorists such as Douhet and Trenchard was that civilian populations could not be expected to withstand a concentrated bombing attack for long. Thus another four years of war such as 1914–18 with its estimated nine million combatants killed and 37 million overall casualties would not be possible. Was this another aspect of air power suggesting a revolution in military affairs?

Sherman's dictum was also questioned by the United States Army Air Forces (USAAF) through a strategic doctrine devised by its Air Corps Tactical School. War might be refined if a strategic air attack were directed at carefully selected critical industrial targets. Again, the fielded forces would be bypassed. Again, Clausewitzian thought was overturned but there would be no destruction of cities and their populations for the USAAF. Unescorted but heavily armed bombers such as the B-17 would employ a sophisticated bombsight and bombs could be dropped in daylight from over 20 000 feet into a 44-gallon drum or, as the Americans put it, a 'pickle barrel'. Better, argued the theorists at the Air Corps Tactical School, to destroy, for example, the factories making ball bearings than the military equipment which ran on them. Better to destroy energy at its source than the weapons which depended on it. Such doctrine postulated the idea that by attacking critical industrial targets the war economy would quickly collapse.<sup>18</sup> The result again would be a relatively short war.

Speakers more capable than me will, I am sure, develop some of the issues I have raised. Theory and practice can be very different. Trying to understand the past, for me, involves argument from evidence coupled with reflection. I suspect there is disagreement among you with parts of what I have said; if not all of it. Michael Sherry, in his fine book *The Rise of American Air Power*, termed the period between the wars as 'The Age of Fantasy'.<sup>19</sup> But as this conference proceeds it might be concluded that doctrine must be one of the most difficult things to get right. Much peacetime designed doctrine, training, and preparation for war has proven to be faulty. To recognise and adapt actual combat experience into renewed doctrine and training might be the mark of an effective military

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18 See Tami Davis Biddle, *Rhetoric and Reality in Warfare: The Evolution of British and American Ideas About Strategic Bombing, 1914–1945*, Princeton University Press, Princeton, NJ, 2004.

19 Michael S Sherry, *The Rise of American Air Power: The Creation of Armageddon*, Yale University Press, New Haven, CT, 1987.

organisation. Much is said today about the employment of uninhabited aircraft, or drones. Just one final question: have they yet to be deployed in a strongly contested airspace? I leave it there.

# AIR WAR IN EUROPE: WORLD WAR II

MR SEBASTIAN COX

Thank you very much. May I start by thanking Air Marshal Brown and Group Captains Hinchcliffe and Wood for inviting me to address you today, and all those behind the scenes, in particular Sandra Finney and Debbie Fisher, for their hard work in organising this conference.

I have been asked to talk to you on the air war in Europe and the Mediterranean between 1939 and 1945. I therefore have 35 minutes to address the most intense and large-scale air war in history, so no pressure. The general outline of the air war is hopefully familiar to you all but I am going to start by looking at the influence of prewar policies because many aspects of the airmen's performance were inevitably and inextricably bound up with prewar doctrines, organisational structures, history, geography, and lastly and, I would suggest, most importantly of all, the political, geo-political and economic outlook and structures of the states themselves. We will then move to the more familiar outline:

1940 - Poland and France

1940 - Battle of Britain

1940–1942 - The Middle East

1941–1944 - The Eastern Front

1939–1944 - The Bomber Offensive

1944–1945 - Denouement

Conclusions

Let me start with the British. The traditional view of the Royal Air Force (RAF) is of a Trenchardian bomber-obsessed air force, with a doctrine hostile to any form of cooperation with surface forces which results in a skewed structure and early disasters in Norway, France etc. Consider this, however, when Trenchard retired in 1929 the metropolitan RAF had 32 front-line RAF squadrons in the UK. Of these, 12 were fighter squadrons, 10 were bomber squadrons, five were Army cooperation squadrons, four were maritime squadrons and one was a communications squadron.<sup>1</sup>

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1 Royal Air Force, *The Monthly Air Force List*, His Majesty's Stationery Office, London, December 1929.

Whilst the RAF undoubtedly had an intuitive and pervasive faith in the bomber, its formal doctrine did not neglect other roles. Its February 1940 war manual, AP 1300, specifically stated as being intended to cover strategic aspects of air warfare, contained 20 pages on air bombardment, which included incidentally interdiction operations, and 14 pages on operations in support of the Army.<sup>2</sup> There was also a separate manual on Army cooperation.

The principal reasons the RAF went to war in 1940 with a structure heavily skewed to Bomber and Fighter Commands and weak in cooperative forces were political, geo-strategic, financial and economic. It was a deliberate political decision by the UK Government to concentrate rearmament in the 1930s on the RAF and, within that, firstly to concentrate on building a strong bomber force.<sup>3</sup> Its specific aims and intentions were political. Internationally: the deterrence of Nazi Germany. Domestically: the avoidance of any commitment to involvement in a European land war which was anathema to politicians and public alike, along with a desire to limit the cost of rearmament. There was also a powerful fear of air attack, partly fuelled by exaggerated Air Staff appreciations, so air rearmament was politically less contentious. The Air Staff also stressed offence over defence prior to the advent of radar. The Government thus explicitly sought to avoid building a large army—so, no expeditionary force, no substantial Army air support requirement. Britain's geo-strategic position and history also favoured this policy. It is therefore principally politics, economics, grand strategy and geography, not RAF doctrine which sets up 1940.

Faced with the collapse of appeasement in February/March 1939, the Government does a grand-strategic *volte-face* and commits to a 32-division field force and starts staff talks with France, but RAF production programs, command and control (C2) organisation and infrastructure are all in place for a different war.<sup>4</sup> Strategic incoherence stemmed from government policy not simply RAF doctrine.

And what of the enemy and allies? Germany's geo-strategic position sees her surrounded by potential enemies with powerful land forces. The Luftwaffe therefore develops a doctrine, partly vindicated in the Spanish civil war, of combined arms cooperation.

But let us be clear this was not a force, as some have suggested, dedicated to close support of the Army. The Luftwaffe from the start stressed the importance of the air superiority battle and its early doctrine manual, LW16, indicates that

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2 Royal Air Force, Air Publication (AP) 1300, *Royal Air Force War Manual: Volume 1 – Operations*, 2nd Edition (Provisional), February 1940, especially Chapters VIII & XI.

3 See Sebastian Cox, 'British military planning and the origins of the Second World War', BJC McKercher & Roch Legault (eds), *Military Planning and the Origins of the Second World War in Europe*, Praeger, Westport, CT, 2001, pp. 103–119.

4 *ibid.*

operations at depth in the enemy rear had a higher priority than close air support. But, like AP 1300, LW16 also spoke of targeting production facilities, railways, government centres etc and indicated that the sources of enemy power were still to be attacked even during combined operations.<sup>5</sup> Various strategic target types were discussed in detail. Because, however, both Goering and Hitler wanted a rapid build-up of the Luftwaffe for both political and military reasons, and because the greatest threat in that period was from contiguous nation-states, they were content to develop twin-engined bomber designs at the expense of heavier long-range aircraft as the former required fewer scarce production resources and gave greater frontline numbers more rapidly, hence the designs adopted were the Heinkel He 111 and Dornier Do 17 and later the Junkers Ju 88. The Luftwaffe's heavy bomber programs were not so much abandoned as fatally delayed to the point where the exigencies of war killed them.<sup>6</sup>

The significant difference here was not so much doctrine, as joint training. The Luftwaffe appointed liaison officers (*Flivos*) to Army Corps and the Spanish Civil War provided the ideal opportunity to hone techniques—nevertheless, contrary to the belief of the soldiers, the Germans did not place the air units under Army command, and most missions were pre-planned not called in, not least because there were no ground-air communications links available.<sup>7</sup>

Luftwaffe and RAF doctrine were not, in truth, significantly different; both allowed for combined warfare, both favoured attacks on rear areas over close air support (CAS), and both featured strategic air attack, though crucially in reverse order of priority. LW16 was a more coherent theory of air warfare than AP 1300 but for both Air Forces it is politics, economics and geography which are the ultimate arbiters of form not doctrine *per se*.

And France? Her geo-strategic position has two hostile contiguous powers; searing memories of 1870 and 1914; toxic domestic politics, including powerful

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5 See James S Corum and Richard R Muller, *The Luftwaffe's Way of War: German Air Force Doctrine, 1911–1945*, Nautical & Aviation Publishing Company, Baltimore, MD, 1998, pp. 118–157.

6 On the Luftwaffe heavy bomber program, see Richard Overy, 'From "Uralbomber" to "Amerikabomber": the Luftwaffe and strategic bombing', *Journal of Strategic Studies*, vol. 1, no. 2, September 1978, pp. 153–175; and Edward L Homze, 'The Luftwaffe's failure to develop a heavy bomber before World War II', *Aerospace Historian*, March 1977, pp. 20–26. The German production program for the Ju 88 strained production resources to the maximum and proved a disappointment in terms of predicted range and bombload, and the later attempt to produce a hybrid 'heavy' bomber by coupling two power plants to one airscrew in the Heinkel He 177, partly through an obsession with giving all bombers a dive-bombing capability, proved a disastrous failure.

7 On the development of Luftwaffe close air support, see James S Corum, 'The Luftwaffe's Army support doctrine, 1918–1941', *The Journal of Military History*, vol. 59, no. 1, January 1995, pp.53–77.

pacifist or anti-military forces; and a politically predominant and conservative-minded Army.

The *Armée de l'air* achieves institutional independence in 1933, but it is politically weak compared to the Army. Within months of its establishment, all but 16 of 134 squadrons were assigned to specific Army commands.<sup>8</sup> On the outbreak of war, squadrons would move from regional organisations to commands which did not even exist in peacetime.<sup>9</sup> The baleful influence of the politics of compromise had extended beyond inappropriate C2 structures to inappropriate procurement. Hence the infamous BCR—bomber, combat, reconnaissance—aircraft, a bastardised attempt to be all things to all men, or more accurately appease airman and soldier simultaneously.<sup>10</sup>

And so to war. The Luftwaffe hones its operational art and tactics in Poland, smashing the Polish Air Force and employing its strong bomber forces in the enemy rear, and its Stuka arm both in CAS and interdiction roles.

In its blitzkrieg campaign in May/June 1940, it meets air forces which actually dispose of superior strength but are organisationally and structurally ill-equipped to meet them. The Luftwaffe again concentrates on the air superiority battle, targeting the opposing air forces on the ground and in the air. The *Armée de l'air* proves virtually incapable of opposing it effectively. There is no adequate air defence warning, and command and control is fragmented and inept. The fighter arm whilst capable of inflicting significant local losses on the Luftwaffe was deployed in 'small packets [which] aggravated, as if intentionally, its quantitative inferiority ...'<sup>11</sup> The Luftwaffe's airfield attacks actually have less effect than is sometimes supposed, destroying only some 60 aircraft on the ground on 10 May.<sup>12</sup> But the French reaction, or lack of it, was staggering. The *Armée de l'air's* principal mission that day was to drop millions of leaflets on Belgium explaining why French forces had crossed into the country, meanwhile the French carried out *NO* bombing attacks at all on day one of the German offensive, not one.<sup>13</sup> This was doubtless in large part because on 10 May 1940, in accordance with the

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8 Patrick Facon, *L'Armée de l'Air en Tourmente: La Bataille de France 1939–1940*, Economica, Paris, 1997, p. 49.

9 Charles Christienne & Pierre Lissarrague, *A History of French Military Aviation*, Smithsonian Institution Press, Washington, 1998, p. 255.

10 On French doctrine and the BCR see Robert J Young, 'The strategic dream: French air doctrine in the inter-war period 1933–1939', *Journal of Contemporary History*, no. 9, October 1974; Jérôme de Lespinois (ed.), *La doctrine de forces aérienne françaises 1912–1976*, ND, documents 19–33; and Christienne and Lissarrague, *A History of French Military Aviation*, pp. 255–259.

11 Christienne and Lissarrague, *A History of French Military Aviation*, p. 315.

12 Facon, *L'Armée de l'Air en Tourmente: La Bataille de France 1939–1940*, p. 173.

13 AD Harvey, 'The French Armée de l'Air in May-June 1940: a failure of conception', *Journal of Contemporary History*, vol. 25, no. 4, 1990, p. 451.



bizarre command arrangements outlined earlier, the French Chief of the Air Staff, General Vuillemin, literally transferred command of three reconnaissance groups, the whole of the daytime bomber force plus the assault aviation groups as well as some fighter units, to General Tétu who commanded the ground cooperation forces in the North East.<sup>14</sup> Meanwhile, other air operations were under General d'Astier de la Vigerie, commander of Zone Operations Arienne Nord. Confused? You are, I am, they were.

Meanwhile, the Germans literally trucked happily on along roads jammed with military transport tailing back into Germany with their headlights full on.<sup>15</sup> The RAF had reacted more promptly but with hardly better success—their attacks were, as the Germans intended, largely directed towards Holland and not the Ardennes. The unfortunate crews of the obsolescent Fairey Battles sent to attack saw 13 out of 32 sorties shot down on day one.<sup>16</sup> General d'Astier's reconnaissance aircraft belatedly identified the German thrust through the Ardennes but the French Army refused to believe it for some time and still directed the air assets to Maastricht. On 14 May, when the bridges at Sedan were at last targeted and became the focus of the Anglo-French air effort, the *Armée de l'air* managed to mount a derisory total of barely 30 daylight bombing sorties.<sup>17</sup> The RAF Advanced Air Striking Force (AASF) Battles and Blenheims, with some support from Bomber Command Blenheims, were far more active flying some 71 sorties, but their courage was in inverse proportion to their tactical wisdom. The attacks were made in successive waves from 0530 until 2050 hours but in formations which were often of between two and six aircraft which thus made the task of the defending flak and fighters very much easier. The RAF lost 33 Battles and 12 Blenheims, and the *Armée de l'air* five bombers.<sup>18</sup> The rest, as they say, is history.

The bravery of Anglo-French crews counted little when the C2 structures and especially communications equipment and cooperative techniques were lacking. Some air support requests from the British Expeditionary Force (BEF) were routed to the RAF's Headquarters in France via London.<sup>19</sup> On the British side these problems can be traced back to prewar decision-making: the failure of the

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14 Facon, *L'Armée de l'Air en Tourmente: La Bataille de France 1939–1940*, p. 175.

15 Harvey, 'The French Armée de l'Air in May-June 1940: a failure of conception', p. 451.

16 Peter D Cornwell, *The Battle of France: Then and Now*, Battle of Britain International Ltd, Old Harlow, 2007, p. 174.

17 Facon, *L'Armée de l'Air en Tourmente: La Bataille de France 1939–1940*, p. 186, speaks of 30 bombers being engaged on the Meuse; whilst Cornwell, *The Battle of France: Then and Now*, p. 266, lists 25 sorties by day and a further six before midnight.

18 Cornwell, *The Battle of France: Then and Now*, pp. 266–275.

19 Group Captain Alistair Byford, Fair stood the wind for France? The Royal Air Force's experience in 1940 as a case study of the relationship between policy, strategy and doctrine, *Air Power Review*, vol. 14, no. 3, Autumn/Winter 2011, p. 45.

British Government to recognise that it had a common interest in the defence of France and the Low Countries. The bizarre thing to note here is that the RAF Chief of the Air Staff had himself told the Chiefs of Staff in 1934 that 'the German air menace ... will be substantially reduced if we can count upon France as an ally, and would no longer constitute a serious danger ... if ... we could hold at least the western half of the Low Countries.'<sup>20</sup> In effect, he was stating that a French alliance and commitment to protect the Low Countries were essential to the air defence of the UK.

By the early summer then Britain faced a Luftwaffe ensconced in bases in a semi-circle around the UK, from Norway to the Contentin Peninsula of Normandy. This clearly posed a much more dangerous threat. However, the RAF's fighter squadrons were now operating under the C2 of a fully integrated radar-directed air defence system, with some hardened facilities, proper and effective communications links, and a well-thought-out division of responsibilities.

This was far more than just radar—practically every advanced nation had radar—but no other nation had integrated it into a proper functional integrated air defence system (IADS). The Dowding system was an exercise in gathering intelligence data, assimilating and analysing it, and distributing it quickly as a 'recognised air picture' round a C2 chain in order to provide appropriate commanders at different levels with the information they needed to fight the battle properly. This was a battle the RAF had been preparing to fight since the 1920s, it was on home ground, and radar and radio technology, telecommunications links, well-designed operations rooms, and multi-gun monoplane fighters had made the defence much more effective. We should appreciate also that it was the shadow of the bomber which drove this significant defensive investment: no fear of air attack, no Dowding system.

On the other side of the Channel was a Luftwaffe flushed with victory, supremely confident, and badly configured for the strategic not *operativ* air war it is about to fight. Its best fighter can only reach the south-east corner of the UK, giving it about five minutes combat time over London, its bombers are vulnerable in the air and do not carry a heavy enough bombload, its Stukas and long-range fighters quickly prove too vulnerable to operate. Its two major air fleets fight their own battles and there is no consistent overall command or direction, just occasional often ineffectual interference. Intelligence, without which any strategic campaign is doomed, is so poor it identifies every British weakness as a strength and every strength as a weakness.<sup>21</sup> The campaign is ill-directed and breaks a fundamental

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20 Quoted in Cox, 'British military planning and the origins of the Second World War', p. 108.

21 On intelligence failings see Sebastian Cox, 'A comparative analysis of RAF and Luftwaffe intelligence in the Battle of Britain, 1940', *Intelligence and National Security*, vol. 5, no. 2, 1990, pp. 425–443.

principle of war—namely the selection and maintenance of the aim. The Nazi state suffers its first reverse in the world's first large-scale purely aerial battle. The Germans' superior fighter tactics availed them nothing because their operational level coordination and strategic direction were flawed.

Fast forward to the Mediterranean between 1940 and 1942. Here exiguous RAF air assets support the British imperial forces in their seesaw war with Axis forces in Libya, East Africa, Greece, Crete, Syria and Malta. This is combined arms warfare *par excellence*. I would argue that the RAF learns fast and is for some time the most effective overall component of the Commonwealth forces in Libya. The Army is at first the predominant Service and has learnt the wrong lessons about air cooperation, having fundamentally misunderstood the Luftwaffe's way of war. It wants air units assigned to Army formations, just as the French had done, and it presses for a dive-bomber. It fails to understand that the air superiority battle is the key enabler and that proper C2 and good communications links and proper **joint** planning, not close Army control, will provide effective support. It too frequently blames the air for its own failure to grasp combined arms integration on the ground. When the RAF did briefly agree to allocate squadrons to Army corps, many sat unutilised on the ground whilst other Army formations were demanding support.<sup>22</sup>

What is often not properly appreciated about much of the War in the Mediterranean, and indeed elsewhere, is not just that the land battle was heavily influenced by air, but actually that much of it was fought for possession of airfields. We have already seen how the RAF considered the Low Countries strategically important for UK air defence. In the Western Desert it was the Cyrenaica 'bulge' and the airfields within it which possessed strategic value. These airfields held the key to disrupting the logistics support of the opposition. When in German hands they made the Eastern Mediterranean a hazardous area for the Royal Navy to operate and thus eastern resupply of Malta impossible—the sea between Crete and Cyrenaica was christened 'Bomb Alley' by the Royal Navy in 1942. The converse was also true.

In May 1941, concerns over German moves in Syria and Iraq resulted in an interesting letter from General Wavell to Churchill which illustrates the point. He wrote:

This Syrian business is disquieting, since German Air Force established in Syria are closer to the Canal and Suez than they would be at Mersa Matruh

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22 On Army attitudes to air-land cooperation see David Hall, *Strategy for Victory: The Development of British Tactical Air Power, 1919–1943*, Praeger, Westport, CT, 1998, especially Chapters 3–5. This is the most comprehensive study of the development of air-land cooperation in the UK forces.

... The whole position in Middle East is at present governed mainly by air-power and air bases. Enemy air bases in Greece make our hold of Crete precarious, and enemy air bases in Cyrenaica, Crete, Cyprus, and Syria would make our hold on Egypt difficult. The object of the Army must be to force the enemy in Cyrenaica as far west as possible, to try to keep him from establishing himself in Syria, and to hang on to Crete and Cyprus.<sup>23</sup>

In other words the immediate task of the Army in the Western Desert was not to destroy the German Army *per se* but rather to shove the Luftwaffe back out of range of Egypt. The Germans invade Crete, for no other reason than its airfields. Over the next year successive offensives fail and then succeed in taking Cyrenaica, only to lose it again, together with Tobruk, previously besieged and held for so long by the Australians. The RAF, however, succeeded in holding its own over this period, and was the principal agent in preventing Rommel routing the Commonwealth forces and reaching Cairo in 1942.

Malta was also a key element in disrupting Axis communications. The Germans twice attempted to reduce Malta by air, but never mounted the invasion which would have secured their communications. They did succeed in making it pretty much untenable for large naval surface forces, but not submarines or aircraft. Ultimately it was these which sank a very high proportion of Rommel's supply convoys including most of his tankers prior to Alamein making that, incidentally joint air-land, victory possible.

It was in the Middle East that the Commonwealth forces learnt the fundamentals of air-ground cooperation, and these were:

- First, win the air battle.
- Close cooperation in planning—air is not an add-on appendix to your operational plan but integral to it, nor is air just fast-response artillery. Indeed, good joint planning will have air shaping the battlefield, usually through operations at depth, long before the ground forces move.
- Good communications, both technical and human—C3 not just C2.
- Armies should not try to command or control air assets.

None of which had applied in France in 1940, at least not on the Allied side. It is interesting to note that these lessons were not easily adopted across the piece. When the Allies mount Operation *Torch* the air C3 (command, control and communications) structures and air-land integration were outmoded and did not function properly until expertise was imported from the Western Desert. The

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23 Quoted in Winston S Churchill, *The Second World War – Volume III – The Grand Alliance*, Cassell, London, 1950, p. 291.

Allies move on to Sicily and Italy, partly again to develop airfields around Foggia to attack Germany's southern air flank.

Let us now consider the main battleground in Europe for much of the war, namely the Eastern Front. Unlike its Western counterparts, the Soviet Air Force, or VVS (*Voyenno-Vozdushnye Sily*), entered the War with Germany, with some combat experience from the Russo-Japanese war and the Finnish War of 1940. However, it had been badly affected by Stalin's purges.

Of 13 000 VVS officers, 5616 were arrested between May 1937 and January 1940, including 75 per cent of the most senior operational commanders. Four successive Air Force Chiefs of Staff were shot or disappeared into the Gulag between 1937 and April 1941.<sup>24</sup> The purges extended to aircraft design bureaus and production facilities. It is not difficult to imagine the catastrophic effect these events had not just on efficiency but also in paralysing thinking and development. To make matters worse, the extension of the Soviet borders to the west with annexations in Poland and the Baltic states meant building new airfields closer to the new borders and, of course, closer to the Luftwaffe and the panzers. Many were unfinished when the blow fell on 22 June 1941.<sup>25</sup> Stalin's well-known refusal to believe the intelligence warnings and face the reality of impending war also had a deadly impact. An astonishing 890 aircraft were destroyed before noon on 22 June, 668 of them on the ground, and Frontal Aviation<sup>26</sup> losses had reached nearly 4000 by 9 July, and a staggering 10 600 combat aircraft by year's end.<sup>27</sup> The Soviet Air Commander pre-empted Stalin and shoots himself.<sup>28</sup>

The Soviets reorganised, and rebuilt, removing air units from the direct control of ground armies and concentrating them in air armies, each with divisions of one aircraft type—fighter, bomber etc.—and with one Air Army assigned to each Soviet Front (or Army Group), effectively the Air Army commander was the ground army's JFACC (Joint Force Air Component Commander). The air and

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24 Reina Pennington, 'From chaos to the eve of the Great Patriotic War, 1922–41', Robin Higham, John T Greenwood & Von Hardesty (eds), *Russian Aviation and Air Power in the Twentieth Century*, Frank Cass, London, 1998, p. 47; and David R Jones, 'From disaster to recovery: Russia's air forces in two world wars', Robin Higham & Stephen J Harris, *Why Air Forces Fail: the Anatomy of Defeat*, University Press of Kentucky, Lexington, KY, 2006, p. 276.

25 Pennington, 'From chaos to the eve of the Great Patriotic War, 1922–41', pp. 55–56; and Jones, 'From disaster to recovery: Russia's air forces in two world wars', p. 275.

26 The Soviet Air Force was divided into Long Range Aviation, Military Transport Aviation and Frontal Aviation. Frontal Aviation's mission was to provide air support to ground forces—essentially, it was the Russian version of a tactical air force.

27 Jones, 'From disaster to recovery: Russia's air forces in two world wars', p. 273; and John T Greenwood, 'Soviet Frontal Aviation in the Great Patriotic War', Robin Higham, John T Greenwood & Von Hardesty (eds), *Russian Aviation and Air Power in the Twentieth Century*, Frank Cass, London, 1998, p. 65.

28 Jones, 'From disaster to recovery: Russia's air forces in two world wars', p. 273.

ground commanders jointly planned offensive operations to integrate fully air and ground operations. A *Stavka* or General Staff reserve was also built up, amounting to between 40 and 60 per cent of air strength, allowing for rapid reinforcement for offensive or defensive purposes. As the war on the Eastern Front progressed, the VVS built up its strength and the initial dispersal and ineffectiveness of Soviet air was thus gradually reversed so that Frontal Aviation had some 11 500 aircraft by January 1945<sup>29</sup> They included much more effective aircraft like the *Sturmovik* and the Yak-9.

By contrast, the story of the Luftwaffe on the Eastern Front is one of initial spectacular success, followed by gradual and ultimately accelerating decline, masked in part by a capacity to achieve localised and sometimes significant, though increasingly rare, successes in compensating for the declining combat power of the German Army. By no means all the Luftwaffe's decline was due to the resurgent VVS as we shall see shortly. Oil was, of course, one of Hitler's prime motivations for Operation *Barbarossa* and in particular the oil of the Caucasus.

Having failed to take Moscow, the Wehrmacht's 1942 campaign was aimed at conquering the Crimea and taking the Germans to the oilfields of Maikop and Baku. Hitler needs the oilfields, desperately, but his forces in the vastness of Russia are badly overstretched, and yet he sends the 11th Army under one of his best generals, von Manstein, supported by the bulk of Luftflotte IV to capture the peninsula which he could have sealed off. Why? Once again, it was the need to possess or deny airfields. Hitler repeatedly stressed the importance of denying Crimean airfields to Russia because of the danger of air attack to his principal existing source of oil, the Rumanian refineries around Ploesti. Hitler's Directive 34 in August 1941 explicitly stated that 'the capture of the Crimean Peninsula is of extreme importance for safeguarding our oil supplies from Rumania'. He restated this conviction very powerfully on a number of occasions, referring to the Crimea as Russia's 'aircraft carrier' for attacking Rumanian oil.<sup>30</sup> Yet *Generaloberst* Lohr had to withdraw much of Luftflotte IV from supporting Manstein in January 1942 in order to forestall a Soviet counterattack further north.<sup>31</sup> This was to be the familiar pattern for the Luftwaffe which was repeatedly expected to pull the Wehrmacht's chestnuts out of the fire, a task for which von Richtofen's *Fliegerkorps VIII* became particularly famous.<sup>32</sup> The 1942 drive on the Caucasus failed, and the Germans were suckered into fighting for Stalingrad and when

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29 Greenwood, 'Soviet Frontal Aviation in the Great Patriotic War', *passim*.

30 Joel SA Hayward, *Stopped at Stalingrad: The Luftwaffe and Hitler's Defeat in the East, 1942–1943*, University Press of Kansas, Lawrence, KS, 1998, pp. 9–10 & 29.

31 *ibid.*, pp 38–39.

32 *Generaloberst* von Richtofen later took over command of Luftflotte IV and was succeeded by *Generalleutnant* Martin Feibig.

Paulus's Sixth Army was surrounded, Goering and Luftwaffe Chief Jeschonnek promised Hitler that the 750 tons of supplies per day it needed could be airlifted in.<sup>33</sup> This delusion contributed to the catastrophic defeat that followed. The Luftwaffe on the Eastern Front, though still capable of influencing operations, went into a slow decline from 1943 onwards.

As the tide of war turned against the Germans, the Luftwaffe, by constantly switching forces around the Eastern Front, was 'able to achieve a number of short tactical successes against advanced and vulnerable Soviet spearheads, but Luftwaffe intervention was now no longer on a scale or of a character formidable enough to exert direct influence over the broad outlines of strategy'.<sup>34</sup> The VVS, however, though important was not the prime agent of its decline.

The astute amongst you will have noticed I have not referred to the Allies' strategic air offensives, in which RAAF Article XV squadrons played such a gallant part. Here, despite prewar doctrine, the RAF early on found itself ill-prepared, poorly trained, with poor materiel, and tactically and operationally inept. Early disasters by day drove it to the cover of night. It took a further 18 months to discover that Bomber Command too seldom found its targets, usually could not hit them when they did, and if the bombs did hit they did little damage. Not an impressive record for a force on which so much depended post-Dunkirk. The Americans arrived imbued with a similar if slightly different doctrinal faith courtesy of the Air Corps Tactical School: namely daylight precision attack of selected critical target systems by self-defending bombers—'Flying Fortresses' in name, but not in fact. An illusion shattered over Schweinfurt.

Both forces were eventually to become effective but it took time. In the British case, a combination of improved training, tactics, radio navigation and bombing aids with better aircraft, bombs, flares, bombsights, target markers and, crucially, target-marking. Some of which you might think should have been present earlier, and you would be right; financial constraints notwithstanding, too little or often no thought had been given to these aspects inter-war. By 1943, by concentrating his bombers, using pathfinders to mark targets, and developing better tactics and techniques, Sir Arthur Harris had forged a formidable force capable of devastating attacks.

In his monumental study of the German economy, Professor Adam Tooze concludes that by the end of 1943 Bomber Command alone had wrecked the Ruhr and Albert Speer's carefully planned economic expansion along with it, at a time

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33 For an excellent analysis of the debacle surrounding the decision to supply the German Sixth Army in the Stalingrad pocket from the air, see Hayward, *Stopped at Stalingrad: The Luftwaffe and Hitler's Defeat in the East, 1942–1943*, pp. 233–250.

34 Air Ministry Pamphlet No. 248, *The Rise and Fall of the German Air Force 1933–1945*, Air Ministry, London, 1948, p. 242.

when the USAAF 8th Air Force had still to become effective.<sup>35</sup> With the advent of the long-range Merlin-engined P-51 Mustang the USAAF found the antidote to the German day fighter arm and in the process achieved air superiority over the Luftwaffe in time for *Overlord*. Despite the prewar theorists, the USAAF actually shoots the Luftwaffe out of the sky, rather than bombing it into oblivion. The VVS and the RAF made some contribution to the process but the real credit belongs to the USAAF.

I will come back to the economic effects of bombing later, but there were important and growing military effects from 1943 onwards, namely the diversion of military resources to what was in effect a second front over Germany. In early 1943 with Stalingrad and Tunisian battles raging, 59 per cent of the Luftwaffe's fighters were in the Western theatre fighting the bombers, by January 1944 it was 68 per cent and by October 1944, as the German armies battled to keep the Allied armies from Germany's borders, it was 81 per cent.

In summer 1944 there were more than 2000 flak batteries in Germany and just 301 in all of Russia.<sup>36</sup> Flak absorbed half the production of the electronics industry and one third of the optical industry together with one fifth of all ammunition production.<sup>37</sup> Had a much higher proportion of these fighters and 14 000 heavy guns been at the battlefield, the Allies cooperative warfare techniques would have faced formidable problems. The Germans also effectively ceased producing bombers—blitzkrieg was dead.

It is one of the ironies of this offensive, however, that at just the period that the USAAF is decimating these very fighters over Germany and is thus about to become an effective bombing force, Bomber Command is moving in the opposite direction. Harris is seduced by Berlin, and the force suffers heavily in the winter battles, culminating in the disastrous Nuremburg raid, as the ECM (electronic countermeasures) war has moved back in Germany's favour. The Command is saved from itself by its diversion to *Overlord* and being placed under Eisenhower and Tedder. Here, both strategic and tactical air forces contribute mightily to the invasion through the interdiction of French railways. Prior to D-Day, interdiction was intended to isolate Normandy through destruction of the Loire and Seine bridges, mostly by medium and fighter-bombers. Post-D-Day the strategic bombers, principally Bomber Command, continued to attack choke points and in all some 43 000 tons of bombs were aimed at these targets, whilst a further 24 000

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35 Adam Tooze, *The Wages of Destruction: The Making and Breaking of the Nazi War Economy*, Allen Lane, London, 2006, pp. 597–598.

36 Richard Overy, *The Bombing War: Europe 1939–1945*, Allen Lane, London, 2013, pp. 406–407.

37 Air Ministry Pamphlet No. 248, *The Rise and Fall of the German Air Force 1933–1945*, p. 298; and Sebastian Cox (ed.), *The Strategic Air War Against Germany, 1939–1945: The Official Report of the British Bombing Survey Unit*, Frank Cass, London, 1998, p. 97.



tons were aimed at the bridges. When the Germans dispatched the 9th and 10th SS Panzer Divisions from Poland to Normandy in the week after the invasion it took them five days to reach France by rail, a distance of 1000 miles, but the bulk of the Divisions, particularly the support elements, were forced by the bombing to detrain at Nancy in Eastern France and the remaining 350-mile journey by road took a further nine days.<sup>38</sup>

Meanwhile the capacity of tactical air power to disrupt German operations and conversely protect the extremely restricted and vulnerable assault area is well known. The Allied armies within their own lines can deploy how, when and where they wish and stockpile materiel pretty much with impunity. On the other side, the Germans are severely restricted in their ability to move and especially to concentrate, and they must camouflage everything. They can only really move safely at night. In effect, therefore, the Normandy battle is like a chess game where the Allies have two moves to the Germans' one. Incidentally, the recurrent theme of airfields resurfaces in Normandy. Montgomery promises to seize the good airfield country to the East of Caen on or shortly after D-Day and the RAF plans accordingly. The armies never do seize this area in depth prior to the breakout in August, a situation further strained by Monty's pretence that all was proceeding to plan which did little to improve air-land relationships. In fact, the plan to deploy both the 2nd Tactical Air Force's fighter-bomber groups to Normandy soon after the landings has to be put on hold and only 83 Group is deployed. No 84 Group has to continue operating from UK bases with deleterious effects on sortie generation rates, loiter time, and responsiveness: a fact which is seldom commented on by the many historians who have written about the campaign.

By September France is largely free and the Allied armies have liberated Brussels and are poised on the borders of the Reich, at which point the strategic bomber forces revert from SHAEF's (Supreme Headquarters Allied Expeditionary Force) direct command to effectively being under General Carl Spaatz and Sir Charles Portal. Incidentally, the armies' advance has taken out much of the German early warning radar chain in France thus making Bomber Command effective once again. In the last six months of the War the Allied bomber forces are directed to prioritise German oil production and it falls to below 25 per cent of its peak level, effectively grounding much of the Luftwaffe, and making it impossible for the vaunted German panzer arm on either Western or Eastern Fronts to manoeuvre en masse, or at times manoeuvre at all. You cannot fight 20th century mobile warfare without fuel.

The Germans simply cannot react to Allied moves on the ground quickly enough or in sufficient strength even when they have forces available, they can achieve

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38 Cox (ed.), *The Strategic Air War Against Germany, 1939–1945*, pp 116–118.

only local success without operational or strategic impact. This was a direct result of Allied strategic bombing. At the same time, the bombers wrecked the German transportation system bringing the German railways to a near standstill and effectively ensuring the final collapse of the German war economy and with it the Third Reich's capacity to resist the Allied armies by now pressing at her borders.<sup>39</sup>

Some conclusions? Air power is a key enabler and deployed effectively gives asymmetric advantage—the Germans use it to nullify Anglo-French and Russian numerical superiority, the Allies use it to nullify German mobility and tactical prowess. Air superiority is critical to success, again early on the Germans have it, but not over Britain, where superior C4I (command, control, communications, computers and intelligence) defeats them. The British and Americans use air power both strategically and jointly and, once they solve the tactical problems and deploy them in strength, their bomber forces achieve real strategic effect which impacts every theatre in a way that purely tactical or operational level air power could not have done. Proper joint planning is also essential. Airfields also loom large in campaign planning, whether in the Low Countries, Cyrenaica, the Crimea, Malta, Crete, the Foggia Plain, or Normandy.

Finally, as we have seen, prewar political decisions continued to influence air power well into the war—politicians make the ultimate decisions, mainly on economic and grand strategic grounds. They still do, and not always for sound reasons, as Chiefs past and present here will probably confirm.

Thank you very much.

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## DISCUSSION

*Air Commodore Andrew Dowse (RAAF – Moderator):* You said that the UK had been preparing for defence of the homeland since the 1920s, which a lot of us don't really recognise, but how would you characterise the mobilisation effort that did happen around the 1939–1940 time frame?

*Mr Cox:* Well one of the things that happens, obviously, is that you get radar. Radar is invented by Robert Watson-Watt in 1935. He conducted the first experiment in 1935 and by 1940 you have a fully functional IADS. The

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39 The outstanding account of the effect of the strategic bombing offensive on the German transportation system is Alfred C Mierzejewski, *The Collapse of the German War Economy, 1944–1945: Allied Air Power and the German National Railway*, University of North Carolina Press, Chapel Hill, NC, 1988.

communications links and the radar stations have all been built and put in within five years but some of that structure was already present. The basic operations room system stemmed from the First World War. The RAF had experimented with radio control of fighters at places like Northolt. Partly as a result of their own obsession with being a great bomber force, they were already thinking about air defence. They did not prioritise it but it didn't mean that they weren't thinking about it. And Dowding's system is actually built on structures that were already, to some extent, in place.

*Flight Lieutenant David Bentley (RAAF – Australian Air Force Cadets):* I have a question about Sir Arthur Harris and his role. There has been a lot of fair, and unfair, comment aimed at Arthur Harris. However, how do you feel about his fixation on area bombing? You mentioned the transportation plan a little while ago and, in fact, the US Army Air Forces eventually, grudgingly started area bombing shortly after that. How do you feel about his fixation with area bombing of cities and his reluctance to move towards the direction of attacking what he called 'panacea' targets or the transportation plan?

*Mr Cox:* It's actually a much more complicated issue than many people, indeed many historians in my view, have made it out to be. There is a bit of an obsession with statistics amongst the critics. They point at things like only 14 per cent of his attacks were on oil in last few months of 1944. But, if you look at the USAAF 8th Air Force, their comparable statistic was only four per cent higher, but nobody argues that Carl Spaatz didn't want to go for oil. Now, Harris didn't want to go for oil but he said he was attacking oil as much as he could. Whether you believe him or not partly depends on your point of view, but I've looked at what he actually attacked. Point one: by the end of November 1944, Harris's bombers had destroyed all of the oil facilities in the Ruhr, which they had been tasked with doing while the 8th Air Force went deeper. As the weather changes and nights get longer and days get shorter, you've got to turn that around and the RAF has to go deep and the USAAF has to go closer in. I think by January in the famous correspondence between him and Portal, which is what everybody depends on, they're both arguing in their corner. I think Harris is actually truthful when he says, 'I've done about as much as I could.' The weather does change in early 1945 and he devotes about 25 per cent of his effort to oil. That's about the maximum you could use because the attacks on oil, even night attacks, rely on good weather. You cannot hit Poelitz or Leuna or Brux oil refineries at night without good weather for the target markers and you don't get much good weather in the winter in north-west Europe. So, he uses about the maximum amount he could on those targets. Also a lot of his city attacks are directly related to the Combined Strategic Target Committee's list of priority transportation targets, but he does them by area attack because that's principally the method he can use.

There are other complex things that I don't have the time to go into but I do think, however, that Harris still went on attacking some target cities which he didn't need to attack. I don't think he should have bombed Darmstadt and there are a couple of other German cities that I think it was a waste of time and a waste of lives to attack. But for Harris, like everybody, the obverse of his good points is his bad points. He was the man who made Bomber Command an effective force by force of personality and a good technical understanding of what he had to do and the way he had to do it, but he was obsessed with making his force effective and at the time he did that it was by area bombing—that's what wrecked the Ruhr. He's not flexible enough in mind to realise by 1945 that he doesn't need to do that. But that is partly a product of exactly that personality drive which had made his force effective in the first place. Now, you could have fired him but I'm not sure you'd find anybody better, unless it was Tedder.

*Mr Ayoola Olukanni (Nigerian High Commissioner):* I once participated in the 100 years of the Australian Navy and they had a conference like this and we also took part in a symposium as well. We also had members of the Nigerian Air Force here as well. I have had cause to work in the United Nations several times involving peacekeeping operations and I have also had cause to work in Tel Aviv in Israel and I went back to New York as well. I want to ask you, because your last point was that the buck stops at the table of the politicians in terms of what happens, what is your assessment of the international political scenario, especially the United Nations and peacekeeping and the UN Security Council, as an effective instrument in terms of perhaps saying that we will not develop more sophisticated aircraft? I'm saying that in terms of these usual maintainers of peace and security because you said the buck stops at that table.

*Mr Cox:* Are you referring to what was then the League of Nations or are you referring to the contemporary situation ... ?

*Mr Ayoola Olukanni:* The contemporary situation as far as the United Nations is concerned.

*Mr Cox:* Well, I don't profess to be an expert in international affairs but the United Nations, like all supranational organisations, has its weaknesses. Even the Security Council can't really, except in exceptional circumstances, direct it to do specific things. The United Nations is the sum of its parts, and there are a lot of parts. So it is not really surprising to me that it is not *the* most effective international organisation but it is better than having no United Nations, in my humble opinion. But I would stress the fact that I don't pretend to be an international relations expert. Its predecessor, the League of Nations, was a complete failure, and you might argue that the United Nations fails a lot but it does do some things which are not complete failures. I think I will just leave it there.

# AIR WAR IN THE PACIFIC: WORLD WAR II

DR RICHARD R MULLER

Good morning. It is a privilege to be here, on my first visit to Australia. For the past few years at the School of Advanced Air and Space Studies (SAASS), and for the 14 years before that at the USAF Air Command and Staff College, I have worked with RAAF students and colleagues, and their presence has greatly enriched both schools.

My task this morning is to offer some historical observations about the role of air power in the Pacific War. A fully detailed chronological recounting of this fascinating subject would consume our entire time for the rest of the day, so out of courtesy to my fellow presenters I will limit my remarks to the following topics. First, I will offer a look at the air power balance that existed in the theatre at the outset of the war in 1941, examining in particular the development of Japanese naval aviation, and United States naval and Army Air Forces air power. Then, I will consider three major forms of air power employment: carrier aviation, the employment of land-based or what might be termed 'theatre' air power, and strategic bombardment.

The term 'Pacific Theatre' is somewhat misleading. This was a vast battlespace, covering a major portion of the globe, stretching from the shores of Australia, to the jungles of Malaya, the islands of the South-West Pacific, the watery expanse of the Central Pacific, to the fogbound Aleutian Islands of Alaska. War in this region stretched beyond the Western-centric 1941–1945 period; war in Manchuria began in 1931, followed by the invasion of China proper in 1937. For the purposes of this talk, I will focus on the naval air war in the Central Pacific, the 'island hopping' campaign in the South-West Pacific (SWPAC), and briefly consider events in the China-Burma-India theatre.

All of the major battlegrounds of World War II had their challenges, but operating in the Pacific battlespace was particularly problematic. The nature of the theatre offers a stark illustration of what Professor Blainey has called 'the tyranny of distance'—vast expanses of water in which otherwise insignificant island outposts assumed tremendous importance. It would be hard to imagine a more inhospitable combat environment—one that was especially hard on the finely-tuned precision aeronautical products from Mitsubishi and Pratt and Whitney. These particular theatre factors had a large impact on air power, while at the same

time air power offered a chance of solving, or at least mitigating, the associated difficulties.

## THE AIR POWER BALANCE

How is it that a small island nation was able to contest for hegemony in the Pacific? The reasons are many, but Japan's development of a superior air-sea capability in the form of naval aviation was a prominent military factor. The Imperial Japanese Navy (IJN) from the 1920s exhibited a keen interest in aviation. In common with the United States and British Royal navies, the IJN embraced Admiral Alfred Thayer Mahan's vision of decisive fleet engagement. The IJN took an early lead in integrating air power with the battle line. This took the form of the *Kido Butai* (Mobile Strike Force), a semi-autonomous carrier force that could operate in support of the battle fleet as well as wielding an offensive punch of its own. By the early 1940s, the IJN led the world in terms of the ability to conduct multi-carrier operations (six fleet carriers participated in the attack on Pearl Harbor). The IJN also fielded a superior complement of tactical aircraft—the A6M 'Zero' fighter, the Nakajima B5N torpedo bomber, and the Aichi D3A dive-bomber. The superiority of the Zero was most striking; it disproved the axiom that a carrier-based aircraft must be inferior in performance to its land-based counterparts. During the early months of the war the Zero seemed to sweep all before it, as it brushed aside the obsolescent P-40s, Brewster Buffalos, and Wirraways of the Allied air arms.

The IJN also recognised the need for a long-range strike and reconnaissance capability for successful operations in the vast theatre. It accordingly developed a class of 'land-based attack planes'—long-range bombers designed to operate out of forward island bases, projecting air power and exercising control over maritime operations. Long-range flying boats such as the Kawanishi H8K 'Emily' extended the 'eyes' of the Japanese fleet out hundreds of miles.

The IJN's air arm was certainly formidable, yet, as historian Mark Peattie noted in *Sunburst*, his classic study of Japanese naval aviation, it was akin to a prize-fighter with a 'glass jaw'.<sup>1</sup> Japanese carrier design and crew training neglected armour protection and damage control measures. The aircraft types emphasised manoeuvrability, range and payload at the expense of armour plate and firepower. Even the famed Zero possessed hidden weaknesses. And while the Japanese pilot training program undoubtedly produced superior aviators, it did so in tiny numbers—very few candidates were able to meet the astronaut-like mental and physical requirements for entry. And the insistence upon perfection during the

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1 Mark R Peattie, *Sunburst: The Rise of Japanese Naval Air Power, 1909–1941*, Naval Institute Press, Annapolis, MD, 2001, p. 159.

course did not help matters. Future fighter ace Saburo Sakai recalled that 45 of 90 members of his pilot training class were washed out, many for the tiniest of infractions. In the fullness of time the IJN's weaknesses would become apparent, but all that lay in the future.

The United States Navy (USN) thought for decades about planning and executing a hypothetical war against Japan. Since the 1890s, generations of naval officers discussed, developed and wargamed the so-called War Plan *Orange*. This featured a major drive across the Central Pacific (CENTPAC), would be decided by a Mahanian clash of the battle fleets, and would ultimately bring the Japanese home islands under siege. As technology progressed, *Orange* was continually modified, and it would be updated into the air age.

An influential faction within the USN recognised the utility of aviation, both as a fleet auxiliary and as a force ultimately capable of independent action separate from the battle line. Although the naval aviation community often viewed itself as hindered by the 'mossback admirals' of the battleship-dominated Navy, in truth aviation developments forged ahead in the years following World War I. The Bureau of Aeronautics (BuAer) was created in 1921, under the energetic leadership of the visionary Rear Admiral William Moffett. Moffett advocated the development of dirigibles and long-range flying boats as 'eyes of the fleet', and also oversaw the conversion of the USN's first carrier, the humble USS *Langley*, a former collier. Fast carriers of the *Lexington* class (themselves modified battle cruisers) followed in 1927, and in a series of elaborate exercise or 'fleet problems' throughout the 1920s and 1930s, the USN worked through the theory and practice of carrier operations—including a simulated carrier strike on a Sunday morning at Pearl Harbor (1932), and the employment of carrier forces in support of an amphibious landing (1937). Many of the questions about the possibilities of carrier aviation remained unanswered, but at least they were being asked.

The United States Marine Corps had been a Service in search of a mission following World War I. It thought a great deal about the problems of counterinsurgency or 'small wars' in the course of operations in Latin America. As War Plan *Orange* evolved and war with Japan loomed on the horizon, the Fleet Marine Force reoriented itself towards the problem of launching amphibious assaults on defended shores, in the process capturing the island bases *Orange* would need for its successful prosecution.

The US Army Air Corps (in 1941 the Army Air Forces) also gave some thought to the problems of war in the Pacific. Air power visionary General Billy Mitchell argued in the years after World War I that land-based air power would shortly displace 'seacraft' as the pillar of national defence. Certainly Mitchell got many things wrong—for example, he greatly underestimated the utility of aircraft carriers. Yet it is worth underlining the many things he got right, especially his ideas about aviation's ability to conquer the vast Pacific spaces and the

vulnerability of even the most modern warships to land-based air attack. Yet his successors at the Air Corps Tactical School (ACTS) found themselves consumed with the problems and prospects of an impending war with Germany, and accordingly the main USAAF planning and requirements documents envisioned only a holding action in the Pacific.

## THE CARRIER WAR

The struggle in the Central Pacific was from the outset a naval clash, and the aircraft carrier quickly came to dominate events. It is safe to say that without a carrier strike capability, Japan would never have contemplated the wide-ranging offensive operations that opened the war. And it is equally true that the carrier capability was instrumental to the Allies' ability to absorb the initial blow, recover, and transition to the offensive.

The development of the IJN's air arm had by 1941 produced a weapon with great mobility and striking power. Combined Fleet commander Admiral Isoroku Yamamoto saw an opportunity to utilise this weapon to neutralise the powerful US Pacific Fleet at Pearl Harbor, secure the vital Southern Resources Zone, and establish a far-flung defensive perimeter demarcated by island bases to shield Japan from an Allied riposte. He famously predicted, 'For six months, I will run wild.'<sup>2</sup> Few of his colleagues were of a mind to heed the second part of his prediction, where he refused to guarantee anything if the war endured for more than one year.

Run wild the Japanese certainly did. In a dawn carrier strike on Sunday 7 December 1941, two attack waves launched off of six carrier flight decks disabled the battle line of the US Pacific Fleet (fortunately, none of the precious US carriers were in port) and decimated the Navy, Marine and Army air power based at Pearl Harbor. The raid was a smashing tactical success, but focused as it was overwhelmingly on fielded forces, it did little to cripple the US fleet for the long term (the oil tank farm and the dry docks, for example, were not even targeted). Yet for the first months the Japanese seemed unstoppable. In short order, Japanese forces overran Malaya, Wake, Guam and the Philippines (after destroying General Douglas MacArthur's air force on the ground). A powerful Royal Navy squadron, consisting of *Prince of Wales* and *Repulse*, was sunk off the coast of Malaya in less than one hour by Japanese land-based attack planes. In a stunning display of combined arms virtuosity, the Japanese overran the Netherlands East Indies and Burma, and were even launching air raids on Darwin in northern Australia. This

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2 Samuel Eliot Morison, *History of United States Naval Operations in World War II: Volume III – The Rising Sun in the Pacific, 1931 – April 1942*, Little, Brown, Boston, MA, 1961, p. 46.



run of victories was every bit as impressive as the German Blitzkrieg in the West in 1940—and equally dependent upon air power.

And air power was equally central to the Allies' recovery. Air units fought desperate rearguard actions, while the USN's handful of carriers launched a series of raids on Japanese outposts and, in one exceptional case, the home islands. This was the famed 'Doolittle Raid', consisting of 16 B-25 medium bombers launched off the carrier USS *Hornet*. Damage to Tokyo and other mainland targets was insignificant, but the raid caused great jubilation in the US as well as consternation in Japan. It is likely that the strike convinced the Japanese leadership of the need to expand their defensive perimeter, which led directly to the ill-fated Midway operation.

Carrier air power (as well as some timely code breaking) also contributed to two important turning points that marked the end of the Japanese march of conquest. For the first time in the war, a major Japanese offensive thrust (the invasion of Port Moresby) was turned back after a pitched air-sea battle in the Coral Sea in May 1942—the first blue-water naval engagement in which the two surface fleets never saw each other—all of the action was conducted by carrier aircraft. The consequences of Coral Sea were profound, though the battle is eclipsed in popular memory by the dramatic Battle of Midway the following month. USN code breaking by Station HYPO at Pearl Harbor alerted Admiral Chester W Nimitz, Commander-in-Chief Pacific Fleet, to a Japanese attempt to take Midway Island, and enabled him to station three carriers north-east of the island. In a few decisive minutes on 4 June, three Japanese carriers were set ablaze (a fourth was crippled later in the day).

Victory at Midway allowed Nimitz to move up his timetable for taking the offensive, and he looked to the prewar *Orange* war plan for guidance. As US war industry moved into high gear, a re-equipped Pacific Fleet was poised to execute a Central Pacific drive, ultimately bringing the Japanese home islands under direct attack. Yet there was more to Allied grand strategy than a simple playing out of the navy's prewar vision. In order to negate Japan's advantage of interior lines, Allied efforts in the Central Pacific were complemented by a thrust through the South-West Pacific from Allied forces led by General Douglas MacArthur. Such a division of effort might appear profligate, but it certainly served to divide Japanese defensive power and keep them off balance. The Allies, and particularly the United States, were the only powers able to contemplate such a strategy.

The opening rounds of the Pacific War had been fought by the prewar force structures of both sides, but to execute the subsequent phases of the war, the Allies benefited from a wholesale qualitative and quantitative 'recapitalisation' of air and naval forces. No single weapon symbolised this transformation better than the arrival of the *Essex*-class fleet carrier. Its design capitalised on early war experience, and featured state-of-the-art command and control systems, robust

anti-aircraft defences (including the revolutionary proximity fuse). One historian called the *Essex* 'one of the most important products of America's warmaking capability'. Each fleet carrier held 100 aircraft, and they were of improved design—F6F Hellcat fighters, TBF Avenger torpedo bombers, and SB2C Helldiver dive-bombers. Including light and escort carriers, the USN fielded more than 100 new flattops during the war; Japan launched only 10.

There was similar progress in USAAF air armament. The rugged but ageing fleet of 1941–42 aircraft—the P-40 Warhawk, P-39 Airacobra, and A-20 Havoc—gave way to the P-38 Lightning, P-47 Thunderbolt, late-model B-25 (often configured as a commerce destroying 'gunship'), and finally the P-51 Mustang. The long-range B-29 Superfortress was in the pipeline. True, the recapitalisation of the USAAF in the Pacific was slowed somewhat by the demands of the Europe-first strategy. One of General Hap Arnold's staff officers recalled thinking that SWPAC air commander George Kenney was 'not living within his means' with his extravagant demands for late model aircraft.<sup>3</sup>

In stark contrast, the Imperial Japanese air arms failed to recapitalise in a timely fashion. Through 1943 and well into 1944, the Japanese stuck with their increasingly obsolescent front line. The Zero had long since passed its prime by 1943, and the newer Allied types, flown by matching numbers of well-trained aviators, thoroughly mastered it. True, superior aircraft such as the Kawanishi N1K2 fighter began to appear late in 1944, but they were too few and too late. The Japanese also failed to anticipate the changing character of the war: capabilities for anti-submarine warfare and home air defence, both critical necessities by 1944, remained poorly developed. Human recapitalisation also failed; the Japanese training establishment was incapable of supplying sufficient numbers of trained pilots. Fighter ace Saburo Sakai bitterly noted that the pilots expelled from his prewar training class were far better than those who emerged from the wartime training schools.

An inkling of how far the USN had come—and how far the IJN had declined—can be gleaned from a look at the June 1944 operations to take the Marianas Islands. At Midway, the USN deployed three fleet carriers and 232 aircraft against a Japanese force of four flattops and 248 planes. In June 1944, Task Force 58 under Admiral Marc Mitscher fielded 15 carriers and 891 aircraft. The Japanese opposed this armada with a handful of fleet carriers and a few hundred partially trained naval pilots. Not for nothing did US airmen refer to the 'Great Marianas Turkey Shoot'. To the end of the war, the fast carrier task forces operated with near impunity as Allied forces closed in on Japan.

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3 Richard R Muller, 'Otto P. Weyland: "Best Damn General in the Air Corps"', John Andreas Olsen (ed.), *Air Commanders*, Potomac Books, Washington, DC, 2013, p. 105.

After the war, Admiral Nimitz remarked that the war in the Central Pacific unfolded largely as the USN had forecast—but one development, he admitted, took him completely by surprise. This was the decision by the Japanese naval leadership after the Battle of Leyte Gulf to field the *Tokkō* (Special Attack Force), commonly known as the Kamikaze ('Divine Wind'). Young pilot trainees were formed into units that launched terrifying wave attacks against Allied warships, most notably during the Okinawa operation in April 1945.

## THEATRE AIR POWER

Carrier aviation naturally loomed large in a theatre consisting of so much water—yet land-based air operations, particularly in the South Pacific and SWPAC theatres, were also a vital component of both Japanese and Allied strategy. Prewar naval thinking had largely anticipated the role that carrier aviation was to play in the conflict, but the enormous contribution of land-based 'theatre' air power was not fully predicted in prewar air doctrine.

The Solomons campaign, the first major Allied offensive of the war, was in a sense dictated and shaped by the requisites of land-based air power. The rationale behind the provision of land-based bombers in the Japanese naval air arsenal was to secure a defensive perimeter. When the Japanese began constructing an airstrip on the island of Guadalcanal, the Allies were determined to thwart them. The resulting campaign on Guadalcanal has been called 'the model for joint expeditionary operations in a hostile environment'. The Japanese attempted to forestall the landing by launching air strikes from their island base at Rabaul. Once US forces were ashore, control and completion of the airstrip (named Henderson Field) became a top priority. In a complex sea/air/land/subsurface struggle lasting some six months, Japanese attempts to reinforce their forces on the island were opposed by Allied aircraft operating out of Henderson Field; in turn, many Japanese actions centred on attempts to put the field out of action. Famed US naval historian Samuel Eliot Morison concluded that Guadalcanal was 'unique for [the] variety and multiplicity of weapons employed and for coordination between sea power, ground power and air power'.<sup>4</sup>

Air power dominated the fighting in the SWPAC to an even greater degree than in the Solomons. The fighting on New Guinea, as well as the 'island hopping' campaign conducted by MacArthur, depended greatly on air power in all its forms. MacArthur was fortunate in that his air commander, General George C Kenney, proved to be a skilled combat leader willing to modify or discard prewar

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4 Samuel Eliot Morison, *History of United States Naval Operations in World War II: Volume V – The Struggle for Guadalcanal, August 1942 – February 1943*, University of Illinois Press, Champaign, IL, 2001, p. ix.

doctrine in order to deal with the unique requirements of the theatre. Kenney's air power formula, as explained by his biographer Thomas E Griffith, was simple: gain air control over the battle zone; erect an air blockade cutting the enemy off from resupply; 'hammer' the enemy positions; cover friendly forces as they go into the attack; and occupy territory, construct airfields, and push the 'bomber line' forward.<sup>5</sup> Sometimes, in fact, MacArthur looked to Kenney to decide the targets for the next amphibious landings, the better to provide Kenney with the necessary airbases. Such operations turned the traditional definitions of 'supported' and 'supporting' components on their heads.

Kenney's air units won a signal victory against Japanese sea power at the Battle of the Bismarck Sea in March 1943, during which a convoy of troop transports with destroyer escort bound for New Guinea was completely annihilated from the air. In all this Kenney was aided by the RAAF air component, ably led by Air Vice-Marshal William Bostock—one of the few senior airmen of any nationality to pass muster with the exacting Kenney. Bostock's Beaufighters flew alongside Kenney's B-25s through the long hard months of the SWPAC campaign.

Not all of the air power contributions in the SWPAC were 'kinetic' in nature. Although on a small scale when compared to later operations, the innovative use of airlift to 'turn the vertical flank' during the New Guinea campaign was significant. I currently have a student, Major John Poole, who is researching combined air mobility operations in the SWPAC. USAAF troop carriers dropped vital reinforcements and supplies to a small Australian force holding a key airstrip at Wau in January 1943, enabling them to repel a strong Japanese attack. A few months later, at Nadzab, airdrop and air landing enabled an Allied force to take the offensive. In a magnificent illustration of the synergistic effects of air power, the Japanese failure at Wau prompted them to reinforce their divisions in eastern New Guinea. These were the very reinforcements destroyed by Allied air power at the Battle of the Bismarck Sea.

In the China-Burma-India (CBI) theatre, air power also played an important if sometimes unconventional role. The American Volunteer Group (the 'Flying Tigers') won fame in early wartime efforts to bolster the Nationalist Chinese Government against the Japanese invaders. Later, a massive airlift over the 'Hump' helped mitigate the loss of the Burma Road and played an important part in keeping China in the war—a significant display of 'aviation diplomacy'. Critical to its success was the leadership of General William Tunner (of later Berlin Airlift fame) who applied 'business' and statistical methods to increase the airlift's efficiency. Tactical air power was decisive in the British success in the Imphal/

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5 Thomas E Griffith, Jr, *MacArthur's Airman: General George C. Kenney and the War in the Southwest Pacific*, University Press of Kansas, Lawrence, KS, 1998, p. 96.

Kohima campaign, and many see the roots of today's Special Operations Forces in the activities of the First Air Commandos in Burma.

## STRATEGIC BOMBARDMENT

Although strategic bombardment was the centrepiece of the Allied air effort against Nazi Germany, this form of aerial warfare did not play a major role in the war against Japan until the final year of the conflict. The AAF's two major requirements plans—AWPD-1 and AWPD-42—both envisioned a holding action in the Pacific while building up powerful strategic and tactical air forces in Europe. In part, this emphasis reflected geographic realities. The standard long-range bombers—the Boeing B-17 and Consolidated B-24—did not possess the range to span the enormous distances separating Allied bases from the vitals of the Japanese war economy in 1942–1943. Prototypes of longer range aircraft, the B-15 and B-19, had flown in the late 1930s but proved technologically unwieldy and were not developed for mass production. Detachments of B-17s were sent to the Philippines in the last months of peace as a vain deterrent to Japanese aggression, and some of the bombers famously arrived at Pearl Harbor in the middle of the Japanese attack. B-17s had a dismal record at Midway and in attacks on Japanese shipping, and raids on the powerful base at Rabaul, though pressed home with great courage and determination, had little effect. Some B-24 units did manage to strike Japanese oil production facilities in Borneo, but strategic bombing efforts in the theatre took a back seat to the efforts in Europe.

All of this changed with two developments: the capture of the Marianas bases and the arrival of increasing numbers of the B-29 'Superfortress'. The huge bomber, the product of the single largest industrial program of the war, represented AAF chief Hap Arnold's hopes not only for a swift end to the Pacific War, but the future independent United States Air Force as well. Accordingly, despite theatre and air commanders clamouring for the use of the mighty bomber, Arnold created a unique command arrangement. The B-29s would operate under Twentieth Air Force, which reported directly to Arnold himself. The organisational roots of the postwar Strategic Air Command (SAC) began with the Twentieth.

To be sure, the strategic bombing of Japan faced daunting obstacles. Initial operations out of Chinese bases proved unworkable; even after the shift to the Marianas results were below expectations. High winds at altitude and teething troubles with the complex aircraft added to the difficulties. Arnold turned to Major General Curtis LeMay, a hard-nosed, no-nonsense operator, to salvage the campaign. LeMay and his team broke with established doctrine, sending the bombers in at night, at low altitude, and loaded with incendiary bombs. The 20 March 1945 fire raid on Tokyo was the most lethal air attack in history, and one Japanese city after another was burned to the ground in a grim campaign of aerial attrition. Coupled with the cumulative effects of the USN's submarine campaign

against Japanese commerce and the aerial mining campaign (conducted largely by B-29s), the Japanese war economy was at a complete standstill by the late spring of 1945. Yet Allied forces gathered themselves for what was almost universally assumed would be a costly invasion of the Japanese home islands. This proved unnecessary; after B-29s delivered two atomic bombs on the Japanese cities of Hiroshima and Nagasaki on 6 and 9 August 1945, and hard on the heels of a Soviet declaration of war, Emperor Hirohito announced to the Japanese people that they would have to 'bear the unbearable'. Whether the bombs were the immediate cause of the Japanese capitulation remains a subject for fierce debate. That air power, writ large, was an indispensable contribution to that defeat is indisputable.

'Air power', wrote RAND analyst Bernard Brodie, 'had a mighty vindication in World War II'.<sup>6</sup> Yet USN aviators and USAAF (soon to be USAF) airmen disagreed as to the precise form of that vindication. To the carrier admirals, the flexibility and hitting power of carrier aviation was the most significant lesson. The bomber generals of the emerging SAC, in contrast, argued that intercontinental long-range bombers carrying nuclear payloads should be the pillar of national defence. These conflicting visions of 'victory through air power' set the stage for some bitter inter-Service rivalry, culminating in the 1949 'Revolt of the Admirals' (hardly a milestone in the evolution of 'jointness').<sup>7</sup>

Powerful lessons these certainly were—but in their haste to claim the high ground, the advocates of carrier aviation and long-range strategic air power may have been too quick to pass by the many other valuable insights from the diverse ways in which air power contributed to victory in the Pacific. Airmen seeking the roots of the atomic age, the superpower confrontation, and the proper relationship and synergy between land- and carrier-based aviation, would be well advised not to neglect the rich legacy of the air war in the Pacific nearly three quarters of a century ago.

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6 Bernard Brodie, *Strategy in the Missile Age*, Princeton University Press, Princeton, NJ, 1959, p. 107.

7 The 'Revolt of the Admirals' refers to an incident that took place in 1949 in which several USN admirals publicly disagreed with the Secretary of Defense's plans for the reduction of the Navy, and the cancellation of a new carrier project, and a new emphasis on the strategic nuclear bombing role for the Air Force.

## DISCUSSION

*Wing Commander Chris Phelan (RAAF – No 41 Wing):* A common theme through these presentations has been the ability of the coalition to make good on losses of their weapons systems. Given the incredible complexity of the modern weapon system, the long lead times and the massive cost per article, does that sort of thinking still hold?

*Dr Muller:* That's a good question. The idea that future wars would be conducted and won by mass production on the World War II scale—probably not. There is a balance between quality and quantity, and I think that there is value in building the very best and the very finest aircraft, but we have to make sure that we procure sufficient numbers of them to deal with operational losses. Particularly in the United States, I wouldn't say we've 'lost the bubble' but we don't think as much about operating in a contested environment anymore and what that would really mean. That's why I think the lessons of World War II are important. They don't translate exactly—no historical lesson does—but I really think that to go in assuming that the technology is so superior that you won't take losses could lead to a dangerous overconfidence. So I think some attention does need to be paid to that.





# **APPLYING PRESSURE WITH BALANCE: AIR POWER IN THE KOREAN WAR**

**PROFESSOR ROBERT O'NEILL**

The Korean War was a watershed event for international order. It was the first time that a global body had supported intervention with substantial force to stem aggression, and then negotiated an armistice agreement. The Korean War showed that the United Nations (UN) was not the paper tiger that the League of Nations had proved to be in the 1930s. World order was changed, and while the UN has not eliminated major wars, as events in the Middle East have shown over the past 60 years, it has brought a degree of control and regulation into the world which has helped to limit hostilities and find ways of negotiating solutions to problems which otherwise could have resulted in wider wars with death and destruction for many as the result.

The UN achieved this result partly through the willingness of the United States to take the lead, but joint intervention under the UN's auspices could not have happened had the Soviet Union used its veto power against the taking of action by the UN, or had the People's Republic of China occupied China's seat in the Security Council. Nevertheless, in the absence of those factors, the UN showed that it was not ineffective, and its role in world affairs, while not decisive, has been significant ever since.

The Korean War did not lead to significant territorial changes: the final boundary line between North and South Korea was close to its starting position. The war was concluded by an armistice, not by a peace treaty, so in legal terms it continues, nearly 63 years after it began. But at the outset, the United Nations was able to muster a rapid response to the initial North Korean invasion of the South, condemning it formally and then asking the United States to lead an international force in defence of the Republic of Korea. A serious test of the new body had begun.

In military terms the United States was not well placed in mid-1950 to undertake a new major commitment in East Asia. In the view of the Truman Administration, first priority for military assistance had to be given to fostering the strength of the NATO alliance in Europe. Also the defences of the United States itself, particularly defence against air attack, required reinforcing. And to complicate matters, US defence industries that had been reduced in capacity after World War II needed to be upgraded and expanded. Weapons technology was changing rapidly, and in some areas, such as jet fighters, the Soviets had stolen a march on the West.

The stakes in Korea were raised when the People's Republic of China entered the war in full support of North Korea in November 1950. The principal strategic problem for the United Nations Command then became how to sustain a strong position in Korea without having to resort to direct attacks on China itself, thereby escalating the conflict to a war between major powers, even another world war. Truman's task was complicated by the strong pressures he faced from within the US Congress to expand the war to China, even to the extent of using nuclear weapons. He could see the foolishness of that advice and strove to contain the Chinese and North Korean advance of late 1950 by conventional ground, sea and air forces within the Korean peninsula. And by taking this line of policy Truman was able to keep his allies in the UN Command as effective members of the team.

Fortunately, the Chinese kept their participation within limits. They did not attack the Nationalists on Taiwan. They did not extend the theatre of war to include Japan. They continued to allow Britain to have use of Hong Kong, even though the colony was playing a role in supporting British naval operations in Korean waters. They provided artillery, munitions and communications equipment to the Viet Minh in Indochina. But in Korea the Chinese had available a huge and experienced army to deploy against UN Command forces. It was fresh from success in the final four years of the civil war against the Nationalists. It was well trained, equipped with modern weapons especially artillery and tanks, and very capable in the field. The Chinese, like the North Koreans, had little by way of naval forces with which to engage those of the UN Command, provided principally by the United States and Britain. But, to the surprise of many observers, they were able quickly to deploy a new jet fighter, the Soviet-made MiG-15, which was superior to its American counterparts—or rather, a generation ahead.

## THE SHOCK OF THE MiG-15

The feasibility of Truman's 'limited war' strategy came into question early in the Chinese offensive when they sent hundreds of MiG-15 jet fighters into action over Korea. Stalin had first made these aircraft available to the Chinese Communists in mid-1950, to contain Nationalist air attacks on Shanghai and the surrounding area. After the Nationalist defeat on the mainland, the Communists began to train their own aircrew for the MiG-15s. Some Russian personnel remained as tactical commanders and instructors for most of the war, but by mid-1951 many of the MiG pilots were Chinese, and they proved to be very proficient with their high-performance aircraft.

The secret of the MiG-15 was its German-discovered swept-wing design. The Germans had developed this improvement too late in World War II for it to have been effective, but American and Russian aviation engineers soon benefited after the capture of the German designs and their developers. Although both began work on developing the swept-wing design, the Soviets made faster progress,

with the result that by early 1950 they were able to go into volume production of a highly capable aircraft, while the American equivalent, the F-86 Sabre, was still in initial deployment. One important difference between the MiG-15 and the F-86 was that the MiG-15 had been designed as a bomber interceptor while the F-86 began life as a fighter interceptor. The Russian aircraft carried much heavier weaponry and was better armoured.

Former Soviet MiG pilots in the Korean War have testified that in an engagement with US Sabres, their aircraft might take over 40 hits and be able to fly back to base without trouble. In one case a MiG took over 200 hits and was back on line eight days later. The MiG had an empty weight of 7900 pounds, the Sabre's weight was 10 845 pounds. The take-off weights were 13 460 for the MiG and 17 806 for the Sabre. The MiG's engines delivered 5950 pounds of thrust, the Sabre's 5200. They were similar in terms of speed but the MiG's rate of climb was 9840 feet/minute; the Sabre's was only 7250. The MiG's ceiling was 50 000 feet; the Sabre's 47 200. While wartime American estimates of the kill ratio achieved by the Sabre against the MiG were of the order of 10 to 1, more recent, post-Cold War research indicates that it may have been much lower, perhaps around 2 to 1 for contests between the MiG-15 flown by experienced Russian pilots and the Sabre flown by experienced Americans.

Another aspect of the war which increased the impact of the MiG-15 was the availability of forward bases in China, just across the Yalu River. On occasion this sanctuary was breached by overzealous US pilots, but generally it had to be, and was, respected. The Chinese and North Koreans were able to set up a zone in which they enjoyed air superiority, and this was called 'MiG Alley' by UN Command pilots. It was not impenetrable by US and Australian aircraft, but there was generally a cost to pay. Large numbers of MiGs were often waiting at high altitude, sometimes just on the Chinese side of the Yalu, and they would swoop on patrolling UN Command aircraft with deadly effect.

As the war continued, the Americans deployed more Sabres to Korea, but they never had enough to sweep the MiGs from the skies and enjoy uncontested air supremacy over the whole of Korea. They did achieve air superiority over the whole of South Korea, and the southern half of North Korea, but there was always the possibility that the Chinese and North Korean Armies might drive southwards again, with the support of their own tactical aircraft—a worrying possibility for UN commanders to face through 1951, 52 and 53. Another form of air power that played a major role in the Korean War was that of the allied navies, US and British, and for four months in 1951–52, Australian. Naval aircraft deployed from carriers off the east and west coasts of Korea were able to deliver ground support, interdict the flow of enemy troops and supplies, and reconnoitre the battle line and the area north of it.

## OPERATIONS *STRANGLE* AND *SATURATE*

Although the Chinese and North Korean Armies were able to drive forward into South Korea during early 1951, particularly in the Fifth Phase Offensive of April and May, they were halted by the Eighth Army, and it was then the UN Command's turn to advance. The Communists had made their gains by weight of ground force numbers. The UN Command made its gains partly by effective ground-based assaults and partly by air attacks on the Communists' lines of supply and formations of troops moving northwards to a new defensive position. The UN Command air plan for the advance of mid-1951 was called Operation *Strangle*. In essence the country between the battle line and the 39th parallel was divided into three north-south strips, each of which was given to a separate air formation, including one to the Navy, to interdict.

While Operation *Strangle* had some success in terms of destroying large quantities of Chinese stores being moved northwards to avoid their capture by the UN Command, it was not able to cut the flow of Chinese supplies southwards which was essential to the conduct of a fighting withdrawal. The North Koreans showed that they were adept in replacing damaged bridges and sections of railway lines. And most seriously, the losses suffered by US and allied air forces due to Chinese and North Korean anti-aircraft fire were heavy—81 aircraft over three months. Mustangs had proved particularly vulnerable, and the supply available from the US was insufficient to maintain all the US squadrons in Korea. Most of the 35th Wing was transferred to Japan in late May, leaving only one Mustang squadron, No 39, in Korea. B-29 bombers were also in short supply, a situation which continued for the duration of the war, forcing air commanders to reduce heavily the daily sortie rate.

During June 1951 the two opposing sides in Korea agreed to open negotiations on ending the war. The UN Command strategy was to hold on the ground and punish the Communists heavily by air attacks. The Communist strategy was to keep threatening to break through the UN Command defensive line and retake parts of South Korea. From the UN Command perspective, the effectiveness of the air offensive was critical to the success of their strategy. There was no prospect that it could build up sufficient ground forces to drive the Chinese and North Koreans back deeply towards the Yalu River.

Operation *Strangle* became the subject of rigorous reassessment in the closing months of 1951. Results had been disappointing and the costs in US aircraft were high. General Ridgway, Commander-in-Chief UN Command, reported to the US Joint Chiefs of Staff in Washington on 4 January 1952 that although the Chinese and North Korean logistic systems had been impeded by the raids, they were still able to move sufficient supplies forward to maintain a strong defensive position across the peninsula. Given the loss rate that allied air units were suffering, the UN Command was not in a sustainable position. A new air strategy had to be applied.

This plan, Operation *Saturate*, placed more emphasis on cutting the loss rate of UN Command aircraft by focusing on night attacks on the North Korean railway system. It was launched in March 1952 but UN Command aircrew soon discovered that it was very difficult to deliver attacks accurately enough at night to sever railway lines. Also, unless a considerable length of line was destroyed, the North Korean repair gangs could quickly restore the connection and the trains could run again after only a brief interruption in their services. Soon the loss rate of B-26 medium bombers exceeded the replacement rate, and by May only six cuts in the North Korean railway system could be maintained. These were not enough to disrupt rail transport seriously, and a better strategy had to be sought. The loss rate of B-29s also rose sharply, and the viability of American bomber forces in Korea came clearly into question. Ten months of intense interdiction operations had achieved very little. And if the Chinese and North Korean Armies were allowed to build up their supplies they could launch another major offensive and remove any incentive for the Communists to reach a negotiated settlement on anything like the UN Command's terms.

### THE AIR PRESSURE STRATEGY

So it was with serious intent that planners at Far East Air Forces (FEAF) turned to developing a more effective plan in mid-1952. Two bright, experienced colonels were chosen for this task: Richard L Randolph and Ben I Mayo. They spent six weeks analysing the results of individual components of Operations *Strangle* and *Saturate*. They found that the railway interdiction campaign had not been worth the costs and efforts applied. Their overall finding was that air operations had to be conducted with greater attention to their costs: were the likely losses worth the damage that might be inflicted on the enemy? In applying this finding to the three major elements of UN Command air operations, air superiority, logistic interdiction and support for ground operations, greater care had to be taken by air planners or the Far East Air Forces would not be able to sustain their efforts adequately if the war continued for a year or more. It was not good enough to swamp the skies with Sabres simply in order to shoot down MiG-15s. The loss rates of the Sabres had to be reduced and kept down. Interdiction raids should be made only on targets whose value to the enemy was greater than that of the strike aircraft to be placed at risk. Ground support operations should also be regulated by the cost-gain principle. Attacks on low-value enemy targets were not to be made where there was a substantial element of risk for the strike aircraft.

As was to be imagined, these conclusions of the Randolph-Mayo study met a robust reception in some quarters. They ran counter to Air Force culture by emphasising the need for caution rather than the dashing attack. Nonetheless, after two years of experience in Korea they also carried conviction, particularly with senior officers who had to battle within their own organisation for adequate

supplies of new aircraft. General OP Weyland, commanding Far East Air Forces, decided to accept the recommendations and on 10 July 1952 issued a directive which conveyed the essentials of the air pressure strategy to all units. For the remainder of the war these principles governed UN Command air operations.

I have emphasised the air pressure strategy in this presentation for two reasons. First, its development shows the impact that two intelligent mid-level officers can have on the development of major strategies if a commander is willing to open up the existing strategy to some serious analysis. Second, the development of the air pressure strategy has had ongoing implications for the conduct of air operations in other protracted wars. The numbers of American aircraft lost in the Vietnam War make one wonder whether similar principles were being applied in that conflict or not. Military aircraft are very complex and expensive items of equipment. Even an economy as well developed as that of the United States has to observe limitations on its production capacity for such equipment. And of course this thought applies to naval and ground force equipment also. The material costs even of waging a limited war at a safe distance from the United States are huge. The human costs paid by the Service personnel sent abroad to fight these wars are also substantial, and they have to be borne for much longer than the material costs.

### APPLICATION OF THE AIR PRESSURE STRATEGY

For the remainder of the Korean War, the air pressure strategy governed FEAF operations. In operational planning, a new emphasis was placed on target selection. Easily destroyed, low-value targets such as huts and houses were taken off the target lists in favour of substantial buildings and military installations which made direct contribution to the Communist war effort. This logic, however, moved planners into a more contentious area. By the criteria of the air pressure strategy, the North Korean hydro-electric generating stations on the Yalu River were very attractive. They were large, impossible to conceal, and made a vital contribution to the North Korean economy. They had not been struck during the first two years of the war because of their proximity to China. They were only a short distance from the forward Chinese MiG-15 bases north of the Yalu, which raised special concerns about the security of the attacking UN Command aircraft. And they provided electricity to Manchuria as well as North Korea. They were, therefore, of high political sensitivity.

This was apparent to General Mark Clark, the UN Command Commander-in-Chief, when General Weyland suggested that the power stations should be attacked to initiate the air pressure strategy. Clark consulted the Joint Chiefs of Staff who referred the decision to the President. Truman gave his approval and massive attacks were made between 23 and 27 June 1952. They were successful: the stations were knocked out of action. A total of 1514 sorties were flown and only two US aircraft were lost. But when news of the attacks appeared in the

press, a mighty furore began within the camp of the UN Command allies. Strong attacks on the wisdom of these raids were made in the British Parliament. Prime Minister Winston Churchill had to admit that he had not been consulted by President Truman on the raids, even though the British Defence Minister had been in Korea when the attacks were being planned. The Truman Administration had received a lesson in the need to discuss military plans with America's allies, and this flowed back to Generals Clark and Weyland in Korea.

Nonetheless, the air pressure strategy continued to be applied, although with greater care where target selection was concerned. From an operational perspective it was successful, and Far East Air Forces were able to build up their strength in aircraft numbers as loss rates declined. Chinese and North Korean ground forces were not reinforced, and they did not open a new offensive while armistice negotiations ground on at Panmunjom. The UN Command had a reasonably secure position along the battle line which it could maintain in the long term. In the meantime, the Communists had to bear the brunt of destructive air attacks, which by May 1953 had come to include major dams in North Korea which provided water for the rice-fields. The incentives for the Chinese and North Koreans to accept UN Command armistice terms were strengthened considerably as a result of UN Command air operations in 1952–53.

### AUSTRALIA'S PART IN THE AIR WAR

The reputations of smaller and medium powers can be greatly affected by the quality of their participation in a joint military action with larger powers. The impact of No 77 Squadron was so positive that it led to wider diplomatic and political consequences whose nature will be discussed below. First, let me outline the nature of No 77 Squadron's services.

No 77 Squadron RAAF was offered by the Australian Government to the UN Command on 30 June 1950. One of the reasons for the squadron's almost immediate commitment to the conflict was the fact that it had been based in Japan since 1946 and was highly trained and ready for operations. A second reason was the fact that General MacArthur, Commander-in-Chief of the UN Command, had specifically asked for the squadron. The unit was held in high regard by US Air Force personnel in Japan. One of the Australian pilots, Flight Lieutenant Bay Adams, had won distinction as the best shot in the whole of Far East Air Forces, and the squadron had performed well in joint exercises before the Korean War began. In the early months of the war it was one of only eight squadrons available to the UN Command, and with its long-range Mustang P-51D aircraft, it had a greater operational range than the USAF F-80 Shooting Stars and F-84 Thunderjets. Led by an experienced officer with a distinguished war record, Wing Commander Lou Spence, DFC, the squadron established a high reputation in the first few weeks of the war, especially in the ground-attack role.

Given the power and success of the initial North Korean drive into the south, one of the highest priorities for the Far East Air Forces was to attack the advancing formations on the ground to slow them up and weaken the assaults they were able to make on the South Korean Army. No 77 Squadron, with its Mustangs, was well placed for this role, and for much of its first six months in the war, its main task was ground attack. This was a dangerous role because the North Koreans, and the Chinese from November onwards, had good mobile air defence systems. The North Koreans had a small air force, but it was soon driven from the skies by the superior US fighter-interceptor forces that they encountered.

One type of North Korean aircraft that was not quickly shot out of the skies was a light Soviet-made biplane which would often appear singly, at night, and drop small bombs. Because of their time of attacking they were nicknamed 'Bed-check Charlies'. They flew at low altitude and were very difficult to locate and destroy. They did not cause major damage, but nonetheless they were a problem, because they did kill UN Command personnel and damage aircraft on the ground, and they operated throughout the Korean War. A much more serious threat was posed, as I have said, by the Soviet-made MiG-15. Soon it was clear that the MiG-15 far outclassed the Mustang and the Shooting Star, and the US and Australian governments drew the appropriate conclusions. F-86 Sabres began to replace F-80 Shooting Stars in Korea but there were not enough Sabres available to re-equip No 77 Squadron. The only jet aircraft that Australia could buy was the British Meteor 8 which, while superior in speed and high-altitude performance to the Mustang, was still a long way behind the MiG-15. Thirty-eight Meteors were ordered initially but they did not come into service until mid-1951.

In the meantime, No 77 Squadron had to persevere with Mustangs, and avoid the MiGs as far as they could. This meant conducting ground attack operations near the battle line and not seeking to establish air superiority over the northern parts of Korea. The Chinese divisions advancing southwards were not under constant air attack and could deliver weighty attacks against the South Korean, US and Commonwealth army units opposing them. It was not surprising that they retook lost territory in North Korea, and then advanced into South Korea. But that was the limit reached by this offensive, and in the spring of 1951 the Eighth Army began to push back and advance a short way into North Korea.

No 77 Squadron experienced a steady loss rate during these operations, due mainly to enemy ground fire. The intensity of its operations increased from 10 to 24 missions per day. In the period 2 July 1950 to 6 April 1951, No 77 Squadron flew 3872 sorties, lost 16 aircraft, suffered 5 pilots killed in action and another 5 missing in action, and a further 3 killed in accident or training. Target claims included 2336 buildings, 13 bridges and tunnels, 156 ammunition, fuel and supply dumps, and 610 trucks.



From mid-1951 No 77 Squadron flew Meteor 8s into action against the usual run of ground targets and against whatever enemy aircraft they happened to encounter. Their clashes with MiG-15s were generally inauspicious and they were soon taken off fighter-sweep operations over North Korea, and diverted to ground-strike missions. While this reallocation saved the Meteors from severe losses at the hands of the MiG-15s, ground support was not the role for which the Meteor had been designed. It was a large aircraft, and while fairly robust, it suffered at the hands of Chinese and North Korean anti-aircraft gunners. It had to fly in low over its targets, and it often presented a clear target for enough time for the defenders on the ground to fire several aimed bursts of machine-gun fire. No 77 Squadron lost 54 of the 90 Meteors it received during the war, due mostly to enemy ground fire. The squadron performed effectively, but the maintenance of air superiority over the central part of the Korean peninsula had to be left to the USAF Sabres.

### THE WIDER RESULTS OF NO 77 SQUADRON'S PARTICIPATION

Unfortunately Wing Commander Spence was killed when leading a mission close to the battle line on 9 September 1950. His aircraft had failed to pull out of a steep dive and crashed. Nonetheless, the strength of his reputation led to widely shared sorrow within the RAAF and FEAF, and the news of his death travelled very quickly back to high levels in Washington, DC. Four days later, Australian External Affairs Minister Percy Spender had his first meeting with President Truman at the White House. It was meant to be a brief courtesy call of 15 minutes, but for Spender it was a much greater opportunity than the mere expression of diplomatic politeness. He desperately wanted an alliance with the United States—not just a joint participation in a war but a promise of American interest in and commitment to the security of Australia valid for the indefinite future.

Before the meeting Spender had read the Washington newspapers and noted a critical review of the singing of the President's daughter Margaret, who had ambitions to become an accomplished classical singer. After a warm reception by the President in the Oval Office, Spender began by offering Truman his commiserations on this review. It was a dangerous, but in this case, a promising beginning. Truman responded with a long defence of his daughter's singing and many criticisms of press reporters and reviewers who did not fully appreciate her talents. By the time that the President had run his course, he noted that he had overrun the time scheduled for the meeting and asked Spender if there was anything that he wanted to discuss.

Spender had been warned that, as this occasion was meant to be a brief, formal meeting, he was not to raise matters of substance. Well, Spender had one matter of such burning importance to raise that he broke the bounds of protocol and made a strong plea for a formal alliance between the United States and Australia.

Truman responded with warmth, speaking of his gratitude for the splendid services of No 77 Squadron in Korea and offering his condolences on the death of Wing Commander Spence. Not only did he appreciate the high quality of Australia's performance and the readiness of the Australian Government to commit forces to the UN Command, he recalled his experience of Australians during World War I. In September 1918, Truman's division, the 35th, in which he served as an artillery battery captain, came under heavy German pressure and gave way. The Australians, to his west, put in a determined counterattack which repelled the Germans. Truman thought Australians were good to have around if you were in a tight spot. He recounted all this to Spender, showing that experience had left its mark on him, and he promised to discuss the idea of an alliance with Secretary of State Dean Acheson.

This was the beginning of the ANZUS alliance, and No 77 Squadron had played a big part in bringing it about. Building on the President's favourable memories of the 1st Australian Imperial Force (AIF) in France in 1918, these Australian airmen of the 1950s had proved that they would be great allies for the United States, both for their fighting prowess and for the diplomatic strength that Australia would add to that of the United States in the eyes of world opinion. The ANZUS Treaty was signed in San Francisco on 1 September 1951. Thank you No 77 Squadron RAAF!

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## DISCUSSION

*Dr Frank Carrick (University of Queensland):* As I understand it, Australia ended the Second World War with the RAAF being the fifth largest air force in the world. Earlier speakers have pointed to the short term in any new conflict being driven largely by national policy before it. It seems that five short years was enough for the political establishment in Australia to 'unlearn' this lesson, given that Australia went into the Korean War, arguably, not well equipped from an air asset point of view. Would you like to comment on that?

*Professor O'Neill:* I think your criticism is entirely correct. I've been through all the relevant papers of the Chifley Government of the late 1940s. They wanted to cut defence expenditure back but, because of the nature of the Second World War that they had lived through, they thought priority should go to the Royal Australian Navy, so we ordered two aircraft carriers and that is where a lot of the money went.

# THE LIMITS OF AIR POWER OR THE LIMITS OF STRATEGY: THE AIR WARS IN VIETNAM AND THEIR LEGACIES

DR MARK CLODFELTER

For most of the world's population, America's air wars in Vietnam are now ancient history. The first US bombing raids against North Vietnam, conducted in response to attacks by North Vietnamese patrol boats on the destroyer *Maddox* in the Tonkin Gulf, occurred a half-century ago this August. Seven months later, America began its longest sustained 'strategic bombing' campaign, Operation *Rolling Thunder*, against the North. That effort, and the *Linebacker* campaigns that followed, dropped a million tons of bombs on North Vietnam. Three million more tons fell on Laos and Cambodia—supposedly 'neutral' countries in the conflict. Four million tons fell on South Vietnam—America's ally in the war against communist aggression. When the last raid by B-52s over Cambodia on 15 August 1973 culminated American bombing in South-East Asia, the United States had dropped more than eight million tons of bombs in nine years.<sup>1</sup> Less than two years later, Cambodia, Laos and South Vietnam were communist countries.

Did the inability of bombing—and innumerable airlift and reconnaissance sorties—to prevent the fall of South Vietnam demonstrate the limits of air power, or did it reveal that the strategy that relied heavily on air power's kinetic application to achieve success was fundamentally flawed? From the perspective of 50 years after the bombing began, and 40 years after the last bomb fell, the answer to both questions remains yes. Yet the two questions are intimately related, and answering them reveals the enormous impact that a political leader can have on the design and implementation of an air strategy, especially in a limited war. Ultimately, Vietnam demonstrates both the limits of air power and the limits of a strategy dependent on it when trying to achieve conflicting political goals. The legacies of the air wars there remain relevant to political and military leaders grappling with the prospects of applying air power in the 21st century.

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1 Raphael Littauer & Norman Uphoff (eds), *The Air War in Indochina*, Beacon Press, Boston, MA, 1972, pp. 11 & 168–172; and Earl H Tilford, Jr, *Crosswinds: The Air Force's Setup in Vietnam*, Texas A&M University Press, College Station, TX, 1993, p. 109.

The reliance on air power to produce success in Vietnam was a classic rendition of the 'ends, ways, and means' formula for designing strategy taught today at staff and war colleges worldwide. Air power was a key 'means' to achieve the desired 'ends'—victory—and *how* American political and military leaders chose to apply that means to achieve victory yielded the air strategy that they followed. Much of the problem in Vietnam, though, was that the definition of 'victory' was not a constant. For President Lyndon Johnson, 'victory' meant creating an independent, stable, non-communist South Vietnam. His successor, President Richard Nixon, pursued a much more limited goal that he dubbed 'peace with honor'—a euphemism for a South Vietnam that remained non-communist for a so-called 'decent interval,' accompanied by the return of American prisoners of war.<sup>2</sup>

Yet those definitions of 'victory' were only partial definitions of the term. They defined the *positive* political objectives sought—those that could be achieved only by *applying* military force. Equally important, though, were the *negative* political goals—those achievable only by *limiting* military force. To achieve true victory in Vietnam *both* the positive *and* negative objectives had to be obtained—a truism for any conflict. That challenge was enormously difficult for American political and military leaders in Vietnam because the negative goals often appeared to have an equal, if not greater, weight than the positive goals, especially during the Johnson era of the war.

President Johnson had a multitude of negative objectives that prevented him from applying massive military force in Vietnam. While he did not intend to lose 'that bitch of a war' in South-East Asia, he also had no intention of surrendering 'the woman [he] really loved,' the Great Society programs aimed at reducing poverty and achieving racial equality.<sup>3</sup> Preserving the Great Society became an important negative objective for Johnson, one that would prevent him from applying extensive military force. Doing so, he feared, would cause the American public to turn away from the nation's disadvantaged to focus instead on its military personnel in harm's way. Johnson further feared that applying too much force against North Vietnam would cause its two large allies, China and the Soviet Union, to increase their assistance to the North, possibly even with overt

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2 'United States Foreign Policy for the 1970's: Shaping a Durable Peace,' President's Report to Congress, 3 May 1973, *Weekly Compilation of Presidential Documents* vol. 9, 14 May 1973, p. 59. Nixon commented about the Paris Peace Agreement: 'While our essential principles were met, we and the Communists had to make compromises. Many of these were more significant for our ally than for us ... Our friends have every opportunity to demonstrate their inherent strength'. Two months earlier the President had told Major General Alexander Haig: 'The country would care if South Vietnam became Communist in a matter of six months. They would not give a damn if it's in two years'. See Tape 416 Conversations, no. 43, 17 March 1973, Richard Nixon Presidential Library and Museum, Yorba Linda, CA (hereafter, Nixon Presidential Library), 1973.

3 Doris Kearns, *Lyndon Johnson and the American Dream*, Signet, New York, NY, 1976, p. 263.

intervention. As a US Senator on the Armed Services Committee, he had seen firsthand what could happen when American leaders miscalculated regarding China during the drive to the Yalu in the Korean War, and he aimed to prevent a similar mistake in Vietnam. Finally, Johnson was concerned about America's worldwide image, with the globe seemingly divided into camps of communism and capitalism. Exerting too much force against North Vietnam would make the United States appear as a Goliath pounding a hapless David, and likely drive small nations searching for a benefactor into the communist embrace.

Those negative objectives combined to produce an air strategy founded on gradual response, particularly for President Johnson's bombing of North Vietnam. American political and military leaders believed that they had to defeat North Vietnam to stop the insurgency in the South and create a stable government there. Although they knew that the indigenous Viet Cong (VC) contributed more manpower to the enemy's cause than did the North Vietnamese Army (NVA), they also believed that the Viet Cong could not fight successfully without North Vietnamese assistance. Accordingly, they designed an air strategy that gradually increased pressure on the North, allowing President Johnson to gauge reactions from the Chinese, Soviets, American public, and other global audiences while he slowly tightened the bombing spigot. *Rolling Thunder* would creep steadily northward until it threatened the nascent industrial complexes in Hanoi and Haiphong, and Ho Chi Minh, being a rational man who certainly prized that meagre industry, would realise the peril to it and stop supporting the Viet Cong. Denied assistance, the insurgency would wither away, and the war would end with America's high-tech aerial weaponry providing a victory that was quick, cheap, and efficient.

Those assumptions provided the foundation for President Johnson's air strategy against North Vietnam, and all of them were seriously flawed. Battles such as Ia Drang, Khe Sanh, and the Tet Offensive were anomalies during the Johnson presidency; for most of his time in office, the Viet Cong and their North Vietnamese allies rarely fought at all. Together, they fought an average of *one day a month* from 1965 to 1968, and as a result, their external supply requirements were minimal. VC and NVA forces in August 1967 numbered roughly 300 000 men, of whom 250 000 were Viet Cong. Yet that combined force needed only 34 tons of supplies a day from sources outside of South Vietnam—an amount that just seven 2½-ton trucks could carry, and which was less than one per cent of the daily tonnage imported into North Vietnam.<sup>4</sup> No amount of bombing could stop

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4 'Meeting with Foreign Policy Advisors on Vietnam', 18 August 1967, Meeting Notes File, Box 1, Lyndon Baines Johnson Presidential Library (hereafter Johnson Presidential Library), Austin, TX; and Headquarters USAF, *Analysis of Effectiveness of Interdiction in Southeast Asia, Second Progress Report*, May 1966, Air Force Historical Research Agency, file K168.187-21, p. 7. Secretary of Defense Robert McNamara acknowledged in 1967 that communist forces

that paltry supply total from arriving in the South. Still, by fighting an infrequent guerrilla war, the Viet Cong and NVA could cause significant losses. In 1967 and 1968, two years that together claimed 25 000 American lives, more than 6000 Americans died from mines and booby traps.<sup>5</sup>

For President Johnson, the real problem was translating the application of military force into a stable, non-communist South Vietnam, and doing so in a way that minimised American involvement and the chances of a broader war with China or the Soviet Union, and that also maximised American prestige on the world stage. While air power had seemed an ideal 'means' to accomplish those 'ends,' in truth it could not do so. The original *Rolling Thunder* raids in March and April 1965 bolstered the morale of many South Vietnamese who desired a non-communist government, but the South's 'government' was in shambles. After enduring *seven* different regime changes—including *five* coups—in 1964, South Vietnam's political leadership faced another crisis on the eve of *Rolling Thunder*, delaying the start of the air campaign by two weeks before a semblance of order returned to Saigon. The governments that followed—those of Presidents Nguyen Cao Ky and Nguyen Van Thieu—were corrupt and out of touch with the Southern populace.<sup>6</sup> No amount of American air power could sustain such regimes. Indeed, less than six weeks after the start of *Rolling Thunder*, National Security Advisor McGeorge Bundy advised President Johnson that South Vietnam would fall to the Viet Cong if Johnson did not shift the focus of America's military involvement to ground power. The President ultimately concurred,<sup>7</sup> and in summer 1965 he embarked on a program that increased American troop totals from 75 000 to more than 200 000 by the end of the year, with further escalations to follow. The shift in emphasis from air power to ground power preserved the Saigon Government, but did little to assure that it governed competently.

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fought an average of one day in 30 and that they needed 15 tons of supplies daily from external sources. The Joint Chiefs of Staff had estimated in August 1965 that the enemy needed 13 tons per day of 'external logistical support'. See US Congress, Senate, Committee on Armed Services, Preparedness Investigating Subcommittee, *Air War against North Vietnam*, 90th Cong., 1st sess., 25 August 1967, pt. 4, p. 299; and Annex A to JCSM 613-65, 27 August 1965, National Security Files, Country File: Vietnam, Folder 2EE, Box 75, Johnson Presidential Library. The standard military 2½-ton truck could transport 5 tons of goods over roads and 2.5 tons overland. Regarding North Vietnam's import capacity, see Rostow to the President, 6 May 1967, National Security Files, Country File: Vietnam, Folder 2EE, Box 75, Johnson Presidential Library; and *The Pentagon Papers: The Defense Department History of United States Decisionmaking in Vietnam*, Senator Gravel edition, 5 vols, Beacon, Boston, MA, 1971, p. 4: 146.

5 Guenter Lewy, *America in Vietnam*, Oxford University Press, New York, NY, 1978, p. 309.

6 Stanley Karnow, *Vietnam: A History*, Penguin Books, New York, NY, 1997, pp. 455–456, 672 & 675.

7 National Security Action Memorandum No. 328: 'Presidential Decisions with Respect to Vietnam', 6 April 1965, National Security Files, National Security Action Memorandums, Johnson Presidential Library, Boxes 1–9.

Yet Johnson never completely abandoned his hope that air power might yield success. In the summer of 1966, he ordered the bombing of oil storage facilities in Hanoi and Haiphong, convinced that trucks were vital to move North Vietnamese men and supplies south, and that gasoline was essential to keep the trucks moving. The attacks destroyed much of the North's oil facilities but failed to affect the pace of the war. A year later, believing that the loss of North Vietnam's meagre electrical power production capability and its one steel mill and single cement factory would not only impact its ability to fight but also its will to do so, Johnson bombed those targets. The war continued as it had before, even after intrepid Air Force pilots dropped the Hanoi's mile-long Paul Doumer Bridge in August 1967. In short, air power could not affect the outcome of the conflict as long as the Viet Cong and North Vietnamese chose to wage an infrequent guerrilla war—and as long as American political leaders chose to back the inept government in Saigon. The rationale for bombing the North became to 'place a ceiling' on the magnitude of war that the Viet Cong and NVA could wage in the South.<sup>8</sup> That goal faded into oblivion with the opening salvos of the January 1968 Tet Offensive, which demonstrated that American bombing could not prevent the Viet Cong and NVA from stockpiling enough supplies to sustain a massive series of conventional attacks.

Despite the failure of *Rolling Thunder* to achieve success, President Johnson monitored it closely, and tightly constrained actions that American aircrews could take over the North. His negative objectives led to a long list of 'rules of engagement' that did everything from preventing flights through the airspace over Hanoi or Haiphong without his personal approval to limiting how closely aircraft could fly to the Chinese border. Many of those restrictions stemmed from his 'Tuesday lunch' sessions at the White House, in which Secretary of Defense Robert McNamara, Secretary of State Dean Rusk, National Security Advisor McGeorge Bundy (or Walt Rostow after 1967), and Press Secretary Bill Moyers met with the President to select *Rolling Thunder* bombing targets following lunch on Tuesday afternoons, often joined by Johnson's cronies like lawyers Clark Clifford and Abe Fortas. Not until October 1967—after *Rolling Thunder* had been underway for more than two-and-a-half years—did a military officer sit in regularly on the lunch sessions when Johnson asked Army General Earle Wheeler, the Chairman of the Joint Chiefs, to begin a steady attendance.<sup>9</sup>

The political restrictions that President Johnson placed on the air war over North Vietnam caused military commanders tremendous difficulty in implementing

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8 Memorandum, McNamara for the President, 28 July 1965, National Security Files, NSC History: 'Deployment of Major U.S. Forces to Vietnam, July 1965', Vol. 1, Johnson Presidential Library, Box 40.

9 David C Humphrey, 'Tuesday lunch at the Johnson White House: a preliminary assessment', *Diplomatic History*, vol. 8, Winter 1984, p. 90.

*Rolling Thunder*, but those constraints were not the only ones that commanders had to overcome. Indeed, military leaders developed their own restrictions that limited air power's effectiveness. Probably the most onerous of those self-inflicted wounds was the Route Package system created in the spring of 1966 that divided North Vietnam into seven bombing zones. Ostensibly developed to deconflict the multitude of Air Force and Navy sorties in North Vietnamese airspace, the system soon became a warped way to assess which Service seemingly contributed more toward *Rolling Thunder's* effectiveness. The Navy received four of the bombing zones, while the Air Force received the other three. Targets in the 'Navy zones' were off limits to Air Force fighters without approval from the Navy, and targets in 'Air Force zones' were forbidden for Navy aircraft without permission from the Air Force. Such approvals rarely occurred.<sup>10</sup> As a result, a competition developed between the Air Force and Navy to determine which Service could fly the most sorties into enemy airspace.<sup>11</sup> Much as 'body count' became the measure of success for commanders on the ground, 'sortie count' became the measure of success for air commanders, and often led to promotions. Perhaps the most egregious examples of competition occurred during the 'bomb shortage' of 1966, when increased bombing had expended much of the surplus ordnance from World War II and the Korean War. To maintain the desired sortie rate, Air Force and Navy pilots flew missions with less than a full load of bombs, thereby endangering more aircrews than necessary.<sup>12</sup> One Navy A-4 pilot even attacked North Vietnam's famous Thanh Hoa Bridge with no bombs at all, but was told simply to strafe the structure with 20-mm cannon fire.<sup>13</sup>

'Operational controls' amplified the effects of *Rolling Thunder's* political and military constraints. Those controls included such factors as environmental conditions and enemy defences. The North Vietnamese were masters of camouflage, and carefully obscured the highways and trails used to send men and supplies south. Many of those roads were extremely difficult to identify to

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10 USAF Oral History interview of Major General Robert N Ginsburgh by Colonel John E Van Duyn and Major Richard B Clement, 26 May 1971, Air Force Historical Research Agency, file number K239.0512-477, pp. 65–68; and interview of Lieutenant Colonel William H Greenhalgh by the author, Maxwell Air Force Base, Alabama, 17 May 1985.

11 USAF Oral History interview of Lieutenant General Joseph H Moore by Major Samuel E Riddlebarger and Lieutenant Colonel Valentino Castellina, 22 November 1969, Air Force Historical Research Agency, file number K239.0512-241, pp. 17–18.

12 Robert L Gallucci, *Neither Peace nor Honor: The Politics of American Military Policy in Vietnam*, Johns Hopkins University Press, Baltimore, MD, 1975, pp. 80–84; and Littauer and Uphoff, *The Air War in Indochina*, p. 38. In July 1966, after a span of poor weather obscured targets over the North, Seventh Air Force Commander General William C Momyer ordered his fighter pilots not to fly and called for ground crews to perform preventive maintenance on the aircraft. A message then arrived from the Pentagon telling Momyer to fly to prevent the Navy from achieving a higher sortie count. See Greenhalgh interview, 17 May 1985.

13 Interview by the author of a Navy A-4 pilot, who wished to remain anonymous.



begin with, given the dense jungle vegetation that covered much of the country. Meanwhile, the North Vietnamese supplemented their deception techniques with an extensive air defence system that guarded lines of communication and the cities of Hanoi and Haiphong. The Soviet Union provided much of the North's hardware, including SA-2 surface-to-air missiles and MiG fighters. By 1966, many analysts considered Hanoi the world's most heavily defended city, an assessment that most Air Force fighter pilots would certainly have endorsed.<sup>14</sup>

In contrast to the limited inputs that American military leaders had in selecting targets in North Vietnam, in South Vietnam the military chiefs faced relatively few political restrictions. President Johnson and his advisors deemed that raids against enemy positions in the South would provoke only minor reactions from the Chinese or Soviets, and that the strikes condoned by Southern leaders on their own territory would produce a meagre outcry from the American public or the world community. Such attacks required approval only from the South Vietnamese province chief who was responsible for the welfare of those living in his province. Yet obtaining that approval did not guarantee a successful mission. American commanders were often uncertain of enemy positions and bombed 'suspected' staging areas. In particular, American and South Vietnamese troops created 'free fire zones' where they removed the populace and declared that anyone found in the area was hostile.<sup>15</sup> The people traversing the zone, though, were often innocent villagers trying to return to their ancestral homes. Raids against such areas that killed civilians inspired hatred against the United States and the Saigon regime, and made excellent recruiting vehicles for the Viet Cong. In the effort to win so-called 'hearts and minds' and enhance the stability of the Saigon Government, the air power applied over South Vietnam was frequently a two-edged sword.

Whereas the air war over North Vietnam was a conflict for control waged between the Air Force and the Navy, the air war over the South was an even more disparate affair. An array of air forces participated in it—the Marines with their helicopters and jets, the Army with its helicopters and transport aircraft, the Navy with its fighters, the Air Force with its fighters, the Air Force with its bombers, the Air Force with its transport aircraft, and the South Vietnamese Air Force with its small number of fighters, helicopters and transports. Retired Air Force General Richard Myers, who flew two tours as an F-4 pilot during the war, afterward

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14 Air Force Colonel Jack Broughton, a veteran F-105 pilot, called North Vietnam 'the center of hell with Hanoi as its hub'. See Jack Broughton, *Thud Ridge*, Bantam Books, New York, NY, 1969, p. 24.

15 Free fire zones were 'known enemy strongholds ... virtually uninhabited by noncombatants' where any identified activity was presumed to stem from enemy forces and was thus susceptible to immediate air or artillery strikes. See Sean A Kelleher, 'Free fire zones', James S Olson (ed.), *Dictionary of the Vietnam War*, Greenwood, Westport, CT, 1988, p. 163.

lamented the lack of unity of command: 'We had seven air forces working over there. Coordination between bombers and fighters was a rarity. Seventh Air Force, Thirteenth Air Force, the Navy, the Marines, bombers, and airlift all did their own thing. It wasn't as well coordinated as it could've—and should've—been.'<sup>16</sup>

Much to the chagrin of Air Force leaders, operational control of B-52s in South Vietnam transferred from the Joint Chiefs in Washington, DC, to the Commander Pacific Command, Admiral Ulysses S Grant Sharp in Hawaii, and finally to Army General William Westmoreland, America's in-theatre commander, who used the giant bombers as flying artillery to support ground forces. Air Force Chief of Staff General John McConnell believed that B-52s were inappropriate for Vietnam, but nevertheless supported their continued employment there, 'since the Air Force had pushed for the use of air power to prevent Westmoreland from trying to fight the war solely with ground troops and helicopters.'<sup>17</sup> The twisted parochialism and absence of centralised control diminished the prospects that the 'air power means' could make worthwhile contributions to obtaining the desired end of a 'stable, independent, non-communist South Vietnam'. Instead, such deficiencies significantly increased the likelihood that the aerial means—especially its kinetic component—would work against achieving that positive end. America's subsequent positive goal in the war would prove easier to achieve with air power, but that was because the negative objectives changed as well, along with the character of the war itself.

Despite the high-sounding tone of 'peace with honor', President Richard Nixon's positive goal in Vietnam was far more circumscribed, and he relied heavily on air power to help him create a 'decent interval' for the South's development and to recover American prisoners of war. Soon after taking office in 1969, he decided that bombing was the proper means to curtail the build-up of enemy forces in Cambodia, but, since Cambodia was technically a neutral country, he would have to conduct the raids secretly. The raids continued unabated until May 1970 when *The New York Times* reported on the covert missions that had escaped the knowledge of the both the Air Force Secretary and the Chief of Staff.<sup>18</sup> The duplicity suited Nixon with his moniker, 'Tricky Dick', given that he had run for

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16 Interview of General Richard Myers, USAF (Retd), by the author, National Defense University, Washington, DC, 26 November 2013.

17 John Schlight, *The United States Air Force in Southeast Asia: The War in South Vietnam: The Years of the Offensive, 1965–1968*, Office of Air Force History, Washington, DC, 1988, p. 82.

18 Earl H Tilford, Jr, *Setup: What the Air Force Did in Vietnam and Why*, Air University Press, Maxwell Air Force Base, AL, 1991, p. 196. The secret bombing deposited 120 578 tons of bombs on Cambodian soil. See Carl Berger (ed.), *The United States Air Force in Southeast Asia, 1961–1973: An Illustrated Account*, Office of Air Force History, Washington, DC, 1984, p. 141.

President on the platform of ending the war and now was enlarging it, albeit at the request of Cambodian Premier Norodom Sihanouk.<sup>19</sup>

The war that Nixon inherited, though, was not the same as that fought by his predecessor. The 1968 Tet Offensive had decimated the Viet Cong as a significant fighting force, and had also severely impaired the fighting capability of the NVA. Air power had played a key role in the damage inflicted, with the bombing around the Marine base at Khe Sanh destroying two NVA divisions. Because of the wounds received, the NVA again reverted to infrequent guerrilla warfare. When it returned to open combat with the 'Easter Offensive' at the end of March 1972, it attacked with fury resembling the World War II German blitzkrieg, minus the air support. More than 100 000 troops, supported by Soviet-supplied T-54 tanks and 130-mm heavy artillery, attacked in a three-pronged assault against primarily South Vietnamese forces—Nixon had by then removed most American troops from the war.<sup>20</sup> The fast-paced, conventional character of the offensive with its heavy requirements for fuel and ordnance made it ideal for air attack, and the now-vital logistical resupply lines and bridges running back through North Vietnam became prime targets that finally paid dividends. Nixon ordered Air Force and Navy aircraft to pound the supply lines relentlessly in Operation *Linebacker*, plus he also mined the port of Haiphong. American aircraft further provided massive doses of close air support and logistical resupply to South Vietnamese forces that gradually stiffened their resistance.

Nixon could apply liberal amounts of air power against targets in North Vietnam because, unlike President Johnson, Nixon had few negative political goals. Nixon and his savvy National Security Advisor Henry Kissinger, who often acted as Secretary of Defense and Secretary of State as well, had accurately gauged the growing animosity between China and the Soviet Union, and decided to make it a centrepiece of their strategy of détente. A key price for securing the promise of diplomatic recognition to China and a strategic arms limitations treaty—and a wheat deal—with the Soviet Union was a free hand in dealing with North Vietnam. To Hanoi's dismay, both China and the Soviet Union ultimately provided Nixon with that freedom.<sup>21</sup> Nixon also had no equivalent of the 'Great Society' to restrain his actions, and he believed that his success in establishing détente with

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19 Tilford, *Setup*, p. 194; and Richard Nixon, *RN: The Memoirs of Richard Nixon*, 2 vols, Warner Books, New York, NY, 1978, p. I: 472.

20 By May 1972, only 69 000 American troops remained in Vietnam, and most of them were not combat units.

21 Hanoi's Communist Party newspaper *Nhan Dan* described China and the Soviet Union's policy of détente as 'throwing a life-buoy to a drowning pirate ... in order to serve one's narrow national interests'. See *Nhan Dan* editorial, 17 August 1972, Gareth Porter (ed.), *Vietnam: The Definitive Documentation of Human Decisions*, 2 vols, Earl M Coleman, Stanfordville, NY, 1979, pp. 2: 569–570.

the Chinese and Soviets would only enhance his—and America's—image on the world stage.

Nixon's profound concern for his image—and his belief in his own infallibility—often spurred impromptu actions that had dire consequences for his air commanders. Before the North Vietnamese launched the Easter Offensive, evidence of the build-up for it caused Nixon to order a series of air strikes into North Vietnam in late December 1971. Then, in a 3 February 1972 Oval Office meeting with US Ambassador to South Vietnam Ellsworth Bunker and Kissinger, Nixon increased the bombing. The President directed Bunker to notify Army General Creighton Abrams, who had replaced Westmoreland as theatre commander in Vietnam, that Abrams could now attack surface-to-air missile (SAM) sites in North Vietnam, given that the North Vietnamese had begun firing SAMs at B-52s.<sup>22</sup> Air Force General John D Lavelle, the Commander of Seventh Air Force in Saigon, was responsible for carrying out the President's order. Lavelle's efforts to accomplish it merit close scrutiny, for they reveal the disastrous impact that presidential ego and complex 'rules of engagement' can have on commanders charged with implementing a desired air strategy.

For Lavelle, the rules of engagement for air attacks against North Vietnam had changed significantly since President Johnson ended *Rolling Thunder* in October 1968. According to an agreement afterward, seemingly accepted by the North Vietnamese delegation at the Paris Peace Talks, American reconnaissance aircraft could fly over the North but no bombing would occur, provided the North Vietnamese did not engage in hostile actions against those aircraft.<sup>23</sup> Air Force fighters typically escorted those missions in case the North Vietnamese displayed hostile intent. If the pilots received fire, or a headset warning tone indicating that a SAM radar tracked their aircraft, they could respond with a 'protective reaction

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22 'Conversation among President Nixon, the President's Assistant for National Security Affairs (Kissinger), and the Ambassador to South Vietnam (Bunker); Washington, DC, 3 February 1972, *Foreign Relations of the United States, 1969–1976, Volume VIII: Vietnam, January–October 1972*, US Government Printing Office, Washington, DC, 2010, pp. 71–78.

23 In addition to refusing to fire on American reconnaissance aircraft in return for a bombing halt, North Vietnamese negotiators also seemingly agreed that their forces would not move men and supplies across the DMZ (Demilitarized Zone) or fire on major South Vietnamese cities. President Johnson was convinced that North Vietnamese subscribed to the 'agreement'. He wrote in his memoirs: 'Before I made my decision [to halt the bombing], I wanted to be absolutely certain that Hanoi understood our position ... Our negotiators reported that the North Vietnamese would give no flat guarantees; that was in keeping with their stand that the bombing had to be stopped without conditions. But they had told us if we stopped the bombing, they would "know what to do." [American negotiators] were confident Hanoi knew precisely what we meant and would avoid the actions that we had warned them would imperil a bombing halt.' Lyndon Baines Johnson, *The Vantage Point: Perspectives of the Presidency, 1963–1969*, Holt, Rinehart and Winston, New York, NY, 1971, p. 518.

strike.’<sup>24</sup> In late 1971, the North Vietnamese ‘netted’ their radar systems to allow GCI radars to provide extensive information to SAM sites that minimised the need for SAM radar tracking, and that also minimised—or eliminated—the warning tone pilots received prior to missile launch.<sup>25</sup>

General Lavelle determined that this move automatically demonstrated hostile intent from the North Vietnamese, because by merely tracking an American aircraft with any radar, they could now fire at it with SAMs. For him, this blanket radar activation was sufficient for his pilots to fire on North Vietnamese SAM sites, though he was highly selective in the sites targeted. He received an endorsement of this perspective from Secretary of Defense Melvin Laird when Laird visited Saigon in December 1971. The Secretary told Lavelle to ‘make a liberal interpretation of the rules of engagement in the field and not come to Washington and ask him, under the political climate, to come out with an interpretation. I should make them [sic] in the field,’ Lavelle recalled, ‘and he would back me up.’<sup>26</sup> Kissinger also wanted more intensified bombing, arguing for large raids on SAM sites in one fell swoop rather than attacks across several days that grabbed sustained attention in the media. The National Security Advisor told Admiral Thomas Moorer, the Chairman of the Joint Chiefs: ‘Our experience has been that you get the same amount of heat domestically for a four plane attack as you do for 400.’<sup>27</sup>

At the 3 February meeting with Kissinger and Ambassador Bunker, Nixon revealed his understanding of rules of engagement did not exactly match that of Laird and Lavelle, but the President’s intent was indeed the same. Nixon declared that against SAMs, ‘protective reaction strikes’ would now become ‘preventive reaction strikes’ and that no-one would know the difference regarding whether SAMs fired first at American aircraft. He elaborated: ‘I am simply saying that we expand the definition of protective reaction to mean preventive reaction where a

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24 Aloysius Casey & Patrick Casey, ‘Lavelle, Nixon, and the White House Tapes,’ *Air Force Magazine*, vol. 90, no. 2, February 2007, p. 87.

25 *ibid.*

26 *ibid.* In a 2007 letter to the editor of *Air Force Magazine*, Melvin Laird stated: ‘It was certainly true that in my meetings with Gen. John Lavelle I told him that my order on “protective reaction” should be viewed liberally ... Prior to my order, there was no authorization (under McNamara or [Secretary of Defense Clark] Clifford) to destroy dangerous targets except when fired upon without special permission. Gen. Bus Wheeler [Moorer’s predecessor as Chairman of the Joint Chiefs], Adm. Tom Moorer, and Gen. Abrams all agreed with the liberal interpretation on [sic] my order on protective reaction. The new orders permitted hitting anti-aircraft installations and other dangerous targets if spotted on their missions, whether they were activated or not.’ See Melvin R Laird, ‘Letters: The Lavelle affair,’ *Air Force Magazine*, vol. 90, no. 5, May 2007, p. 4.

27 ‘Minutes of a Senior Review Group Meeting – Subject: Vietnam Assessment,’ Washington, DC, 24 January 1972, *Foreign Relations of the United States, 1969–1976, Volume VIII: Vietnam, January–October 1972*, US Government Printing Office, Washington, DC, 2010, p. 25.

SAM site is concerned ... Who the hell's gonna say they didn't fire?' The President added: 'Do it, but don't say anything ... He [Abrams] can hit SAM sites, period.'<sup>28</sup>

Nixon's directive reached Lavelle, who then began an assault on SAM sites in the southern panhandle of North Vietnam. Nixon requested to be kept apprised of air attacks on all North Vietnamese targets and received a detailed, daily compilation of the missions. Those reports originated from Lavelle, and were in turn passed up the chain of command, with Admiral Moorer, Secretary Laird, and Kissinger reviewing them before they went to the President. On no occasion did Nixon express displeasure with the bombing; in contrast, on the 8 February report he scribbled a note in the margin for Kissinger: 'K—is there anything Abrams has asked for that I have not approved?'<sup>29</sup>

Lavelle's actions did not, however, receive universal endorsement. Lonnie Franks, an Air Force technical sergeant who recorded mission results for computer compilation in Saigon, was baffled when pilots erroneously reported enemy ground fire as the rationale for bombing Northern targets. Lavelle had told subordinates that they could not report 'no enemy reaction' after raids, but he had failed to explain that any North Vietnamese radar activation constituted a hostile act that justified a bombing response. The form that Franks used to record data contained only four reasons for expending ordnance over North Vietnam: fire from AAA, MiGs, SAMs, or small arms; no block existed for 'radar activation'. Pilots thus chose one of the listed options, and Franks, knowing that the selections were incorrect, thought that the effort to deceive was deliberate and wrote his Senator. An Inspector General investigation ensued, and Lavelle was removed from command and demoted to major general following hearings by the House and Senate Armed Services Committees.

When Nixon heard of Lavelle's dismissal, the President expressed remorse that the general had been sacked for conducting the missions that Nixon had ordered. 'I just don't want him to be made a goat, goddamnit,' Nixon said to Kissinger in June 1972. Kissinger responded: 'What happened with Lavelle was he had reason to believe that we wanted him to take aggressive steps,' to which Nixon replied, 'Right, that's right.' The President then stated: 'I don't want a man persecuted for doing what he thought was right. I just don't want it done.' He then disparaged Sergeant Franks, comparing him to Daniel Ellsberg who had leaked the Pentagon Papers. Kissinger replied: 'Of course, the military are impossible too,' to which

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28 'Conversation among President Nixon, the President's Assistant for National Security Affairs (Kissinger), and the Ambassador to South Vietnam (Bunker); Washington, DC, 3 February 1972, *Foreign Relations of the United States, 1969–1976, Volume VIII: Vietnam, January–October 1972*, US Government Printing Office, Washington, DC, 2010, pp. 74–75.

29 'Memorandum for the President from Henry A. Kissinger – Subject: Secretary Laird's Daily Report on Southeast Asia Situation', 8 February 1972, National Security Council Files, Box 158, Folder: Vietnam, January–February 1972 (2 of 3), Nixon Presidential Library. Original emphasis.

Nixon responded, 'Well, they all turn on each other like rats.' Kissinger offered: 'I think that this will go away. I think we should just say after all we took corrective steps. We could have easily hidden it. I think you might as well make a virtue of necessity.' To that, Nixon responded: 'I don't like to have the feeling that the military can get out of control. Well, maybe this censures that. This says we do something when they ...' and he stopped in mid-sentence. Then he added: 'It's just a hell of a damn. And it's a bad rap for him, Henry.'<sup>30</sup>

A week later, Nixon decided to take Kissinger's advice. In a 22 June news conference, the President answered questions about Lavelle's dismissal by stating: 'The Secretary of Defense has stated his view on that; he has made a decision on it. I think it was an appropriate decision.'<sup>31</sup> Nixon further stated to the press a week later: 'But he [Lavelle] did exceed authorization; it was proper for him to be relieved and retired. And I think it was the proper action to take, and I believe that will assure that kind of activity may not occur in the future.'<sup>32</sup>

Lavelle became the highest-ranking American officer to receive a public rebuke for trying to implement his President's air strategy, but he was not the only air commander to suffer from Nixon's callousness and ego. Air Force General John W Vogt, Jr, who replaced Lavelle, visited the White House on his way to Saigon and described Nixon as 'wild-eyed' as he berated commanders for lacking aggressiveness in attacking the Easter Offensive. 'He wanted somebody to use some imagination—like Patton,' Vogt remembered.<sup>33</sup> The President elaborated on those thoughts to Kissinger in a memo soon after the *Linebacker* campaign had begun:

I want you to convey directly to the Air Force that I am thoroughly disgusted with their performance in North Vietnam. Their refusal to fly unless the ceiling is 4000 feet or more is without doubt one of the most pusillanimous attitudes we have ever had in the whole fine history of the U.S. military. I do not blame the fine Air Force pilots who do a fantastic job in so many other areas. I do blame the commanders who, because they have been playing 'how not to lose' for so long, now can't bring themselves to start playing 'how to win.' Under the circumstances, I have decided to take command of all strikes in North Vietnam in the Hanoi-Haiphong area out from under any Air Force jurisdiction whatever. The orders will be given directly from

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30 'Meeting between Henry Kissinger and the President,' 14 June 1972, Wednesday, White House, Oval Office, WHT Reference Cassette, C-2240 RC-2, 733-6, Nixon Presidential Library.

31 'Transcript of the President's news conference emphasizing domestic matters,' *The New York Times*, 23 June 1972.

32 'Transcript of President Nixon's news conference emphasizing foreign affairs,' *The New York Times*, 30 June 1972.

33 Quoted in Seymour M Hersh, *The Price of Power: Kissinger in the Nixon White House*, Summit Books, New York, NY, 1983, p. 506.

a Naval commander whom I will select. If there is one more instance of whining about target restrictions we will simply blow the whistle on this whole sorry performance of our Air Force in failing for day after day after day in North Vietnam this past week to hit enormously important targets when they had an opportunity to do so and were ordered to do so and then wouldn't carry out the order.<sup>34</sup>

Nixon never followed through on his threat to eliminate Air Force commanders from the air war against North Vietnam, but he continued to berate military leaders as they worked to implement his increasingly effective air strategy. That strategy proved successful partly because the North Vietnamese persisted in waging conventional war. As long as they did so, their troop concentrations in the South were vulnerable to aerial assault, as were their vital supply lines. The strategy was also successful because the positive 'ends' that Nixon sought from it were extremely limited. Besides securing the return of American POWs, he aimed for an agreement assuring South Vietnam's survival for a brief period of time, and personally guaranteed to South Vietnamese President Nguyen Van Thieu that the South would not fall while he was in office.<sup>35</sup> Accordingly, Nixon had Kissinger propose an 'in-place cease-fire' to Northern negotiators at Paris, which spurred NVA efforts to secure additional territory despite the aerial pounding they sustained. The North Vietnamese responded to Nixon's offer by dropping their demand for Thieu to resign, and a peace accord appeared imminent in late October 1972 when the President ended *Linebacker*. Neither Nixon nor Kissinger

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34 'Memorandum for Henry Kissinger and Al Haig from the President', 19 May 1972, White House Special Files, Staff Member and Office Files, President's Personal File, Box 4, 'Memo—May 1972', Nixon Presidential Library. Original emphasis.

35 Nixon expressed this commitment to Thieu in a letter dated 5 January 1973, and sent Army Major General Alexander Haig to Saigon in the middle of the month to convey the President's commitment personally. See Nixon, *RN: The Memoirs of Richard Nixon*, pp. II: 245–246, and Henry Kissinger, *White House Years*, Little, Brown and Company, Boston, MA, 1979, pp. 1459–1462 & 1469. Yet in forthright conversation with Kissinger during an intense phase of the Paris negotiations, Nixon confessed: 'Let's be perfectly cold-blooded about it. If you look at it from the standpoint of our game with the Soviets and the Chinese, from the standpoint of running this country, I think we could take, in my view, almost anything, frankly, that we can force on Thieu. Almost anything. I just come down to that. You know what I mean?' Because I have a feeling we would not be doing, like I feel about the Israeli[s], I feel that in the long run we're probably not doing them an in—uh ... a disfavor due to the fact that I feel that the North Vietnamese are so badly hurt that the South Vietnamese are probably going to do fairly well. Also due to the fact—because I look at the tide of history out there, South Vietnam probably is never going to survive anyway. I'm just being perfectly candid ...' The conversation continued, with Kissinger concluding, 'So we've got to find some formula that holds the thing together for a year or two, after which—after a year, Mr. President, Vietnam will be a backwater. If we settle it, say, this October, by January '74 no one will give a damn.' See 3 August 1972 conversation between President Richard Nixon and Henry Kissinger, Conversation 760-6, Richard Nixon Presidential Materials Project, NARA, Presidential Recordings Program, Miller Center of Public Affairs, University of Virginia, Charlottesville, VA, viewed March 2014, <[http://whitehousetapes.net/clips/1972\\_0803\\_vietnam/index.htm](http://whitehousetapes.net/clips/1972_0803_vietnam/index.htm)>.



had informed Thieu of the 'in-place cease-fire' offer, however, and once Thieu learned of it, he was incensed.

Thieu's refusal to accept the tentative Paris settlement led to a breakdown in the peace talks and caused Nixon to return to his 'air power means' to secure his positive ends—which now included convincing Thieu that he could depend on Nixon's promise of future military backing. In addition, the President now had a negative political objective that would constrain the amount of force that he could apply. Although he had won a resounding re-election victory in early November, the Democrats seized control of both houses of Congress and threatened to terminate spending for the war when Congress convened in early January. With limited time available to achieve results, Nixon decided to turn to the B-52, with its enormous 30-ton bombload, to do the job. The President had already shifted more than half of Strategic Air Command's fleet of 400 heavy bombers to air bases in Guam and Thailand. He thought that risking the B-52—a vital component of America's nuclear triad—in raids against targets in the well-defended Northern heartland would demonstrate just how serious his efforts were to end the war. On 14 December in Washington, Nixon gave the order for bombing to begin three days later, which was the 18th in Vietnam. In customary fashion, he told Admiral Moorer, the Chairman of the Joint Chiefs, 'I don't want any more crap about the fact that we couldn't hit this target or that one. This is your chance to use military power effectively to win this war and if you don't I'll consider you personally responsible.'<sup>36</sup>

For the crews of more than 200 B-52s, the operation dubbed *Linebacker II* marked the first time that any of them had flown against targets in Hanoi; the bombers had raided Haiphong targets only once before, in April 1972. Still, as the influx of bombers in the Pacific had steadily increased, Air Force General JC Meyer, the Commander of Strategic Air Command, anticipated such an operation and ordered Lieutenant General Gerald Johnson, the Commander of Eighth Air Force on Guam, to design a plan for it. Johnson and his staff submitted the desired plan to Meyer in November 1972.<sup>37</sup> Yet when Nixon's order to begin the assault arrived at Strategic Air Command Headquarters, Meyer chose to disregard the Eighth Air Force plan, and had his own staff in Omaha, Nebraska, create one instead.

The short time span to produce a plan led to a design with minimal ingenuity. Aircraft used the same routes of flight to attack targets at the same times for the first three nights. The North Vietnamese took advantage of the repetitive routing to mass their SAM batteries in the areas where the B-52s turned off target, and then fired their SAMs ballistically, which negated the bombers' defensive capabilities.

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<sup>36</sup> Nixon, *RN: The Memoirs of Richard Nixon*, p. II: 242.

<sup>37</sup> Interview of Colonel Clyde E Bodenheimer by the author, 7 January 1983, Maxwell Air Force Base, Alabama.

The initial three nights produced the loss of eight bombers with five more heavily damaged, and another two fell to SAMs on the night of 21 December. Meyer ended the repetitive routing and, after a 36-hour stand-down for Christmas, turned over planning for the remainder of the operation to Eighth Air Force.

On 26 December, General Johnson's staff implemented the plan that they had designed, with 120 B-52s attacking targets in Hanoi and Haiphong from nine different directions in a 15-minute time span. Two bombers fell to SAMs for a loss rate of 1.66 per cent, and the next day, in Washington, Nixon received word that the North Vietnamese were ready to resume negotiations in Paris on 8 January. The President responded that negotiations had to begin on the 2nd and would have a time limit attached, plus the North Vietnamese could not deliberate on agreements already made.<sup>38</sup> On 28 December, Hanoi accepted Nixon's conditions, and he ended *Linebacker II* the next day. In 11 days, the North Vietnamese downed 15 bombers, but in doing so exhausted most of their supply of SAMs. The mercurial Nixon credited the Air Force with success, telling aide Chuck Colson: 'The North Vietnamese have agreed to go back to the negotiating table on our terms. They can't take the bombing any longer. Our Air Force really did the job.'<sup>39</sup> The President continued bombing in North Vietnam south of the 20th parallel until the initialling of the Paris Peace Accords on 23 January.

For many air commanders, Nixon's dramatic 'Christmas Bombing' vindicated their belief that air power could have won the war had President Johnson employed a comparable operation in the spring of 1965.<sup>40</sup> Nixon himself made a similar assertion in April 1988 when he appeared on *Meet the Press* and stated that his greatest mistake as President was not Watergate but the failure to conduct *Linebacker II* in 1969 after he took office. 'If we had done that then,' he said, 'I think we would have ended the war in 1969 rather than 1973.'<sup>41</sup> Such assertions demonstrate that the Commander-in-Chief—as well as many military leaders—never really understood that the character of war in 1972 had changed

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38 Kissinger, *White House Years*, pp. 1457–1458; and Nixon, *RN: The Memoirs of Richard Nixon*, p. II: 250.

39 Charles W. Colson, *Born Again*, Chosen Books, Old Tappan, NJ, 1976, p. 78.

40 See, for example, 'What Admiral Moorer really said about airpower's effectiveness in SEA', *Air Force Magazine*, November 1973, p. 25; Howard Silber, 'SAC Chief: B-52s devastated Viet air defenses', *Omaha World Herald*, 25 February 1973; USAF Oral History Interview of Lieutenant General Gerald W Johnson by Mr Charles K Hopkins, 3 April 1973, Andersen Air Force Base, Guam, Air Force Historical Research Agency, file number K239.0512-831, pp. 11–13; USAF Oral History Interview of General John W Vogt by Lieutenant Colonel Arthur W McCants, Jr & Dr James C Hasdorff, 8–9 August 1978, Air Force Historical Research Agency, file number K239.0512-1093, p. 69; Admiral US Grant Sharp, US Navy (Retd), *Strategy for Defeat: Vietnam in Retrospect*, Presidio Press, San Rafael, CA, 1978, pp. 252, 255 & 271; and William W. Momyer, *Air Power in Three Wars* (Washington, DC: US Government Printing Office, 1978), 339.

41 Richard M Nixon, statement on NBC's *Meet the Press*, 10 April 1988.

dramatically from what it had been for most of the conflict. The change to conventional warfare with the Easter Offensive was a key reason why air power yielded tangible results.

Moreover, the 'success' that Nixon achieved with air power stemmed from his pursuit of positive and negative political objectives that differed significantly from those of his predecessor. Nixon had no illusions about pursuing a 'stable, independent, non-communist South Vietnam'; the shock of the 1968 Tet Offensive turned American public opinion against the war and made leaving Vietnam the new positive goal. Although he labelled that objective 'peace with honor', in the end Nixon accepted a settlement that offered South Vietnam a possibility of survival, not a guarantee. He gave South Vietnamese President Thieu an ultimatum to accept that agreement, noting that without Thieu's approval the US Congress would likely cut off all funding to South Vietnam. Whether *Linebacker II* persuaded Thieu that he could count on Nixon for support after the signing of the Paris Accords remains a matter for conjecture; the agreement that Thieu reluctantly endorsed in January 1973 differed very little from what Kissinger had negotiated in October 1972.

Nixon's lack of negative political goals enabled him to apply air power more aggressively than Lyndon Johnson. With no conflicting loyalties to a domestic agenda like Johnson, and with détente effectively removing China and the Soviet Union from the equation, Nixon had mainly to worry about the compressed time that Congress gave him to achieve a settlement. Nixon knew that his image would suffer because of the intensified bombing and was willing to accept that tarnishing, though he did not condone indiscriminate attacks. The 20 000 tons of bombs dropped in *Linebacker II* killed 1623 civilians according to North Vietnamese figures—an incredibly low total for the tonnage dropped.<sup>42</sup> Yet in all likelihood, the comparatively unrestrained, non-stop aerial pounding that the NVA received in South Vietnam counted as much, if not more, than Nixon's focused bombing of the North. The attacks in the South directly threatened the NVA's survival, and without that force in place on Southern soil, the North faced a much more difficult path to conquering South Vietnam.<sup>43</sup> Ultimately, air power helped to assure that a flawed Southern government lasted for a few more years.

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42 Murray Marder, 'North Vietnam: taking pride in punishment', *The Washington Post*, 4 February 1973.

43 Observed General Tran Van Tra, commander of communist forces in the southern half of South Vietnam, after having undergone nine months of continual bombing: 'our cadres and men were fatigued, we had not had time to make up for our losses, all units were in disarray, there was a lack of manpower, and there were shortages of food and ammunition ... The troops were no longer capable of fighting'. Tran Van Tra, *Concluding the 30-Years War*, Van Nghe Publishing House, Ho Chi Minh City, 1982 (in Vietnamese), reprint ed. (in English), Joint Publications Research Service, Arlington, VA, 1983, pp. 6 & 33, quoted in Gabriel Kolko, *Anatomy of a War: Vietnam, the United States, and the Modern Historical Experience*, Pantheon Books, New York, NY, 1985, pp. 444–445.

In the final analysis, several legacies emerged from air power's ordeal in Vietnam. The dismal lack of unity of command displayed there spurred development of the Joint Force Air Component Commander (JFACC) concept, in which a single air commander directs the flying activities of multiple Services to achieve objectives sought by the Joint Force Commander. In terms of Air Force doctrine, *Linebacker II*'s perceived success in compelling the North Vietnamese to negotiate reinforced the belief that air power could achieve political goals cheaply and efficiently. The 1984 edition of the Air Force's *Basic Aerospace Doctrine* manual noted that 'unless offensive action is initiated, military victory is seldom possible ... Aerospace forces possess a capability to seize the offensive and can be employed rapidly and directly against enemy targets. Aerospace forces have the power to penetrate to the heart of an enemy's strength without first defeating defending forces in detail.'<sup>44</sup> The manual further encouraged air commanders to conduct strategic attacks against 'heartland targets' that would 'produce benefits beyond the proportion of effort expended and costs involved,' but cautioned that such attacks could 'be limited by overriding political concerns, the intensity of enemy defenses, or more pressing needs on the battlefield.'<sup>45</sup>

The impact of such 'overriding political concerns' on the application of air power is a key legacy of the air wars in Vietnam. To commanders who had fought as junior officers in World War II, where virtually no negative objectives limited military force, the tight controls that President Johnson placed on bombing North Vietnam chafed those charged with wielding the air weapon. Navy Admiral Ulysses S Grant Sharp, who directed *Rolling Thunder* as the Commander of Pacific Command, wrote in the preface of his 1977 memoirs titled *Strategy for Defeat*: 'Our air power did not fail us; it was the decision makers. And if I am unsurprisingly critical of those decision makers, I offer no apology. My conscience and my professional record both stand clear. Just as I believe unequivocally that the civilian authority is supreme under our Constitution, so I hold it reasonable that, once committed, the political leadership should seek and, in the main, heed the advice of military professionals in the conduct of military operations.'<sup>46</sup> Many American airmen from the war likely agreed with Sharp's critique.

*Rolling Thunder* highlighted how negative political objectives could limit an air campaign. Indeed, in the American air offensives waged since Vietnam—to include the use of drones against 'high-value' terrorist targets—negative goals have continued to constrain the use of military force. Projecting a sound image while applying air power was difficult enough for American leaders in Vietnam; today's

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44 United States Air Force, Air Force Manual 1-1, *Basic Aerospace Doctrine of the United States Air Force*, Headquarters US Air Force, Washington, DC, 16 March 1984, p. 2-6.

45 *ibid.*, p. 2-12.

46 Sharp, *Strategy for Defeat*, p. xvii.

leaders must contend with 24/7 news coverage as well as social media accounts that enable virtually anyone to ‘spin’ a story and reach a large audience. In the limited wars that the nation will fight, negative objectives will always be present, and those objectives will produce rules of engagement that limit air power. ‘War is always going to have restrictions—it’s never going to be LeMay saying “Just bomb them”’, stated General Myers, the most recent Air Force Chairman of the Joint Chiefs.<sup>47</sup> Against insurgent enemies, the negative objectives may well eclipse the positive goals sought. When that occurs, kinetic air power’s ability to yield success will be uncertain.

Yet because air power, as a subset of war, is not only a political instrument, but also one that is applied by humans, it will be subject to whims and frailties of the political leader who chooses to rely on it. Richard Nixon saw himself as a Pattonesque figure who could swiftly and efficiently brandish military force to achieve his aims. He felt little compunction in berating his air commanders, or—in the case of General Lavelle—casting one adrift when he thought that doing so might save him embarrassment. Nixon believed that air power gave him the ideal military tool for threatening an opponent or persuading an ally, and that perspective has gained traction in the White House since he left it. The last four occupants of the Oval Office, to include the current Commander-in-Chief, have all relied heavily on air power in the conflicts they fought. The positive goals pursued—‘stability’, ‘security’ and, on occasion, ‘democracy’—have proven difficult to achieve with any military force, particularly with air power. Its siren song is an enticing one, however, as Johns Hopkins Professor Eliot Cohen has astutely observed: ‘Air power is an unusually seductive form of military strength, in part because, like modern courtship, it appears to offer gratification without commitment.’<sup>48</sup> That promise is a dangerous one, as General Myers warns: ‘The last thing that we want is for the political leadership to think war is too easy, especially in terms of casualties. It’s awful; it’s horrible, but sometimes it’s necessary. [The decision for war] needs to be taken with thoughtful solemnness—with the realization that innocent people, along with combatants, will get hurt.’<sup>49</sup> Were he alive today, the Prussian military philosopher Carl von Clausewitz would doubtless nod at General Myers’ observation.

Clausewitz, of course, never saw an airplane, though if he had his air power notions would likely have been unsurprising. Had he examined America’s air wars in Vietnam, he would certainly have commented about the difficulty of achieving political objectives in a limited war. In all probability, he would have looked at

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47 Myers interview, 26 November 2013.

48 Eliot A. Cohen, ‘The mystique of U.S. air power’, *Foreign Affairs*, vol. 73, no. 1, January/February 1994, p. 109.

49 Myers interview, 26 November 2013.

President Johnson's Tuesday lunch targeting process, the Route Package system dividing North Vietnamese airspace, the creation of free fire zones in the South, Nixon's condemnation of his air commanders and dismissal of General Lavelle, the repetitive B-52 routing for *Linebacker II*, and any number of other elements, and stated simply, 'Friction rules.' 'Everything in strategy is very simple,' Clausewitz wrote, 'but that does not mean that everything is very easy.'<sup>50</sup> Perhaps the most enduring legacy of the air wars in Vietnam is the one that applies to *any* military strategy—uncertainty, chance, danger and stress will be certain to limit it.

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## DISCUSSION

*Air Commodore Andrew Dowse (RAAF – Moderator):* Given what we've heard about MacArthur's overreach in Korea, do you think that Johnson's negative objectives might have been at least partly justified?

*Dr Clodfelter:* Well, they were certainly justified in his mind. That point about the 'bitch of a war' in South-East Asia versus the 'woman I love,' being the great society, that comes from the comments he made to Doris Kearns (now Doris Kearns Goodwin) after he left the Presidency. He was conflicted. He believed if he did not focus on the American society, in terms of helping the poor and the underprivileged, he would be letting down the American public and that was his primary mission as President. Yet, he also thought if he didn't stand up to communist aggression in Vietnam, he would be viewed as weak and a coward, and he couldn't accomplish anything for the American public. So both of those goals had to be achieved and, as a result, it caused a very gradual application of military force in regards to air power.

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50 Carl von Clausewitz, *On War*, edited and translated by Michael Howard & Peter Paret, Princeton University Press, Princeton, NJ, 1976, p. 178.

# AIR CAMPAIGNING

## COLONEL JOHN A WARDEN III (RETD)

Mr Chairman, Air Marshal Brown, thank you all very much for the invitation and certainly for the honour and privilege to be able to speak at this extraordinarily impressive meeting. The idea that you can get 1000 people to sit for two days to listen to lectures is pretty impressive in itself. It really is great to be here.

What I would like to do now, after a day that we have spent so far talking about fascinating histories, starting from the very beginning of certainly the Australian association with air power, is to talk about the concepts of air campaigning and do it not so much from a mechanical or a tactical standpoint but more from a foundational kind of a view. In the course of doing this, what I would hope to do is lay out some thoughts that will be useful to anybody that finds themselves in a position of building an air campaign. I might say that, because what we are really going to be talking about is a lot about concepts and strategy, you can actually use some of the ideas to build almost anything, even if it is not necessarily a military operation.

I would like to start here with the really big picture, and that is war. I think that it is important to begin with saying that in war that there are two potential objectives that you can have.

Of the potential war objectives that you can have, one of them is to promote a change in enemy beliefs. Another one is to prevent an enemy from doing something. Now we could obviously talk about the exact wording of this but, conceptually, it seems to me that that really encompasses virtually all of the potential war objectives that one might have. However, of those two, it strikes me that it is only the second that is genuinely susceptible to military operations.

So, where does force work? Firstly, force can prevent an enemy from doing something, and that is quite a range of things. It could prevent the enemy from moving, invading, occupying, ruling (you or somebody else) or, for that matter, even surviving. Force can do those kinds of things.

But there are things that force cannot do, where it does not work. In Mark Clodfelter's preceding discussion paper we saw a lot of instances where force was trying to be used to do something that it simply could not do. So, force really cannot change religious beliefs, it cannot change political ideas and it cannot change cultural ideas, of and by itself. Nor, in fact, will it even allow you to break the will to resist. Somebody may decide to give up, but they decide to give up because they have made that decision, not because of what you have done.

We need to be very careful when we are putting together war operations not to ask force to be responsible for something it simply cannot do. It seems to me that many of the problems that we have experienced over the last half-century have flowed from us asking force to do something—get people to change their minds, be peace-loving Democrats, or whatever it may happen to be—that it simply is not capable of doing.

War is a means to an end. We all know that. There is nothing unusual about that from a concept; a means to an end objective. So all war activity—and when we are talking about war activity here, we are really talking about the military or the force component of it, not that there would not be other things going on—should be conceived and put together in such a way as to realise the objectives that can be achieved by the use of force. And it ought to be done, obviously, as directly and as inexpensively as possible, and that, in most cases, would probably apply to both sides of a conflict.

Air campaigns can lead very directly to significant strategic objectives, if the air campaigns are strategically conceived. So, how do we go about making an air campaign strategic? It seems to me that the first thing we do is we do not start with an air campaign. In fact, we really start with what we call a ‘win the peace campaign’ or, for simplicity, a ‘war campaign.’ Why would we want to do that? Because, if we think about this problem from a ‘win the peace’ standpoint, we are going to reduce the risk of winning militarily but actually losing the war—in other words, the peace that follows—which we have seen happen on more than a few occasions, including the Vietnam situation in a very significant way.

So how do you go about making a war campaign or a campaign strategic? Everything ought to be as simple as it can be and again, after thinking about this for a long time since Vietnam and on, I have come to the conclusion that the simple basis of strategy is asking yourself and answering four basic questions: where, what, how and exit?

So what does this mean? The first question is, ‘Where?’ Where do we want to be in the future? In other words, postwar, where is it that we want to be? What does our opponent look like? And, for simplicity, we will call this the future picture. That is winning the peace, it is well defined.

The second question is, ‘What?’ What are we going to put our resources against? These we will talk about in terms of centres of gravity, the right things to get the right kind of return on our investment.

The third question is ‘How?’ How and in what time frame are we going to operate? The answer here is that we really want to operate in parallel and we want to keep our operations as short as we possibly can.

And the last question is ‘Exit?’ Do we have exits that are pre-planned for a variety of success and failure options? These turn into exit plans and peace transitions.



It is important to go through these in this order but it is even more important that all four of them are addressed and that they are addressed very carefully. We can translate these questions into something a little bit different and put them into statement form.

The first one would be know the national 'win the peace' objectives, the future picture. I will say this several times. If you do not know the future picture, if you do not know the national objectives, the 'win the peace' objectives, if they have not been clearly articulated, it becomes virtually impossible to create a serious campaign of any sort. And, indeed, that was clearly one of the huge problems that occurred in Vietnam; never, ever having a very good articulation of what it was that we were really trying to accomplish.

Secondly, know what you are going to attack in order to get there and, ideally, those things ought to be directly connected with strategic centres of gravity. Third, know how much time you have to win. You do not have an infinite amount of time, or even very much when you get right down to it. And lastly you need to know how you are going to get out, whether you have been successful or not.

Now, to look at these in a little bit more detail. All of this is under the rubric of an overarching concept that we call 'future back'. In strategy, we are always wanting to go out, downstream in time and identify where it is and what we want, and then work backwards to figure out how to get there. If we start from where we are now, what we end up with is a path that could virtually go any place and we have no idea of where it is going to end up.

So, we start with this first question, 'Where?' The future picture is our first and foremost thing. We have got to get this right and we have got to understand it. It has got to be done and it has got to be put together well. You have got to have clear, concise, measurable national objectives. What is winning the peace? You have to have a time horizon. If you do not have a time horizon, you do not have strategy. You may have something but you do not have strategy—no time frame, no strategy.

You also need to know how much you are willing to pay for success. The idea of saying that you are going to go any place and pay any price, or whatever, is a recipe for utter and complete strategic bankruptcy. You cannot do that. These things have got to have prices on them and you need to know what they are up-front.

Once we are certain about what our future picture is, what our 'win the peace' objectives are, the next idea, working backwards, is what needs to change in order to get there. And the answer is you need to change the enemy as a system and you probably need to change yourself also, as a system.



**Figure 1: Change systems to realise the future picture**

Figure 1 shows, on the one hand, with that outline of Iraq overlayed on the larger set of circles that the enemy clearly needs to change. If the enemy is going to do something that the enemy otherwise would not do on its own, presumably you would not be at war, and you need to make changes in the enemy as system. The other circle represents your own country, your own organisation—and, by the way, you can use the same thing if you are an al Qaeda guy, although I would rather hope that you do not.

So what needs to happen out of this is that you have to figure out a way to change your enemy as a system in order to realise a future picture. And you also probably need to figure out a way to make some internal changes to your own organisation to get to a future picture, both of which should be developed.

We have seen some pretty good examples of that in the discussions that have taken place so far today. We have seen that for the states, the countries, the belligerents that failed to make the proper internal changes in their system—even if it was as small a thing as the Japanese changing their training regime—it meant that, even if they were having some success against their enemy, they had not prepared themselves adequately to conduct the war or to bring it to a successful conclusion.

So, what will you put your resources against? Well, system change is needed to realise the future picture. That means identifying the specific centres of gravity that are linked to the future picture. Centres of gravity are not things that are simply out there lying around to be picked up. They are things that are directly related to what it is that you are trying to accomplish. I think it is worth mentioning here that, when you are planning and thinking about centres of

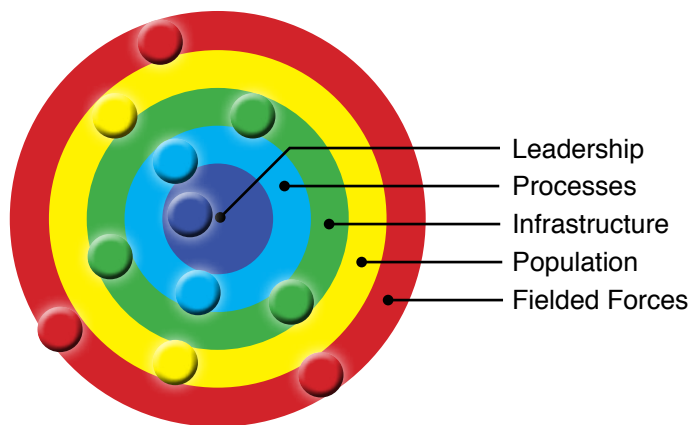
gravity, this is not the place to think about vulnerability. It is not the place to think about strengths or weaknesses or anything else. A centre of gravity is a centre of gravity because of its relationship to the future picture.

After you have identified the future picture, then you use this working back from the future idea to say, 'Okay, what does that centre of gravity need to become in order to play its role in creating the necessary system change?' We are looking at end states of the centres of gravity and we are staying away from tactics. We are not going to even think about what kind of airplanes or bombs or anything for a very, very long time. What do the centres of gravity have to become to contribute to the future picture? We are concerned with end states, not actions.

Now, to turn to the methodology. If we look at any kind of a war situation, the first thing that we find is that, on the surface, it would appear that there are an extraordinarily large number of possible things that you might attack. I can recall when we started our planning in the First Gulf War that the intelligence people said they could already give us 200 000 potential targets in Iraq—200 000, that is an awful lot!

Now, you know intuitively that, out of 200 000, only some of those are going to be genuinely important. So you could call those and identify those things in the enemy system that are centres of gravity. That is fine, that is a good step from everything out there down to something less.

The next step then is to find the ones that are applicable to you realising your future picture, and this is where the five-ring system comes in (Figure 2). I think everybody in here has a reasonable familiarity with it but I would just like to make a couple of points about it.



**Figure 2: The five-ring system**

Firstly, it is five rings because we think this is how all organisations are organised, whether it is al Qaeda or Australia or the United States or China or anybody else:

- leadership elements
- process elements, which are really conversion elements, like generating electricity
- infrastructure
- population, demographic groups that tend to think the same way
- fielded forces

By looking at the system this way, with the five-ring overlay, you get a couple of ideas. One is you get the idea that you are looking at the enemy as a system and that you probably have to make sure that big chunks of that change in the right direction. That then suggests that, if you merely pay attention to that outer ring, the fifth ring, you are not going to get a lot of change because as you are focusing on the fifth ring, the fielded forces, if you have some success against them, then the organisation is simply going to generate more and more fifth-ring forces. We then end up with that situation that was well described in Korea, where we were fighting fifth ring versus fifth ring—the Chinese were pouring stuff in, we were pouring stuff in and all we got was a really nasty, expensive attrition war on both sides.

I also would suggest that we should think about war from the inside to the outside, both in conceptualising and actual operations, as opposed to Clausewitz's concept and his idea that war was a clash of fifth-ring kinds of forces. It does not make much sense when you really think about it, and when you look at the enemy as a system.

What I would like to do now is to go through a few examples, rather quickly, of things that might be centres of gravity or examples of centres of gravity that would be related to some relatively easily discernible future picture in each case. The first one is from the leadership standpoint.

The Byzantine Romans were not particularly interested in having the Huns invade them. They did not particularly want to go out and fight them army versus army, so Emperor Marcian said, 'Hey, what I'm going to do is send an assassin out; he will knock off Attila.' He was successful and, as Attila was the only person within that Hun enterprise who had the ability to lead a successful attack, the problem was solved. Now, rarely are you going to be able to solve a problem by dealing only with just one element in one ring, but this is an example where it really was successful.

For the second example we go back almost 1000 years before the first. The Spartans put a blockade on Athens because they were at war with them and that

blockade basically prevented Athens from functioning. Athens was starving to death, so the Athenians made the decision that they would agree to unconditional surrender. Now it should be noted that if they had not agreed to unconditional surrender, they simply would have stopped surviving. So, the problem was solved, either way, from the standpoint of the Spartans.

The next example is not representative of a military operation but something that I thought was rather interesting that happened in the United States about a month ago. There was a sudden snow and ice storm, which is a little bit unusual in Atlanta, and this was the result. Traffic all across Atlanta came to an absolute and a complete stop. So, what is the point? This is an attack on infrastructure, if you will. The roads became impassable and Atlanta stopped functioning, so it really prevented the city from doing anything other than waiting for the snow and the ice to go away.



**Figure 3: Baghdad strategic targets**

Figure 3 shows a spot photography map of Baghdad during the First Gulf War. Towards the end of that war we wanted to have something we could show to the media, the television audience, in the United States and we could not use our normal satellite photography because it was classified. Well, the French were very kind and they gave us this nice spot photography. The little dots on the photograph show the only things that were hit in Baghdad. We wanted to show this to the media to illustrate a couple of things. One was to show that, while we had attacked Baghdad, we had only hit very small parts of it. In fact, for the most part, the destruction was to a particular building or, in some cases, even just part of a building. So, unlike the Berlin photos that we saw earlier today, there really was not much in the way of destruction in Baghdad, but enough things were hit that it simply made the Iraqis unable to function at a strategic level.

The next example is a little bit closer to home geographically to where we are right now. This was during the Malayan Emergency in the 1950s and part of the Briggs Plan, with which I am sure you are all familiar.<sup>1</sup> The whole idea was to separate the communist fighters from their support base and it ended up being pretty successful as one element of that operation.

The last example looks at the fifth ring, fielded military forces. The destruction of the Iraqi Army in Kuwait in 1991 basically prevented the effective military occupation of Kuwait.

I want to make one point here clear and that is that there were people—quite a number of them, actually—that said, ‘Well, your problem is in Kuwait so all your military operations ought to be in Kuwait’; in other words, a force-on-force kind of an operation. And, you know, we could have done that but if we had, we were probably going to end up exactly the same way that we have in Korea, looking at each other across the 38th parallel for the next 50 years or whatever it happens to be. If we do not have an impact on the strategic centre of Iraq, on Iraq as a system, we can blow up a lot of tanks and kill a lot of people but it is not going to accomplish very much at all, certainly over any significant period of time. We are not going to win the peace that is going to follow.

I would now like to talk a little bit about this idea of matching targets with postwar objectives. I made the point earlier that centres of gravity need to be related to your ‘win the peace’ objective for the war. So, among our other objectives in the First Gulf War, was that at the end of the war, or shortly thereafter, Iraq would be functional and it would be able to defend itself against outside attack from people like the Iranians or the Turks, or whoever might be interested in doing so.

One of the things that we wanted to do during the course of war was to shut off the electricity within Iraq. There were a lot of reasons to do that and it worked out pretty nicely. But the targets that you saw, the centres of gravity that you saw, have got to be lined up with what your end of the war objectives, your ‘win the peace’ objectives, really are.

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1 **Editor’s Note.** Lieutenant General Sir Harold Briggs, the British Army’s Director of Operations in Malaya, developed an overall strategy, known as the Briggs Plan, to combat the communist terrorists in Malaya. Briggs determined that the best way to defeat the insurgency was to cut the insurgents off from their supporters amongst the population. Part of the Briggs Plan, therefore, involved the forced relocation of about 500 000 rural Malaysians (including some 400 000 Chinese) from squatter communities on the fringes of the jungle into new villages surrounded by fences and police posts, cutting the communists off from their source of food, supplies and manpower.

Leadership	Processes	Infrastructure	Population	Action Units
Minister of Interior	Energy Conversion	Transmission Lines	Managers	State Security Forces
Chief Iraqi Electrical Grid	Electrical Generation		Linesman	Repair Teams
Site Manager	Voltage Control		Engineers	End Use Sites
			End Users	

**Table 1: Matching targets with postwar objectives**

So what we did was we looked at the electrical system using the five-ring system again (Table 1). We call this a fractal look at a centre of gravity. I will not go into detail on this other than to say that it did not take very long looking at this to say, there is probably not much we are going to be able to do in the leadership area, not much in infrastructure, the population or the fielded forces (action units) kinds of things, so our focus will probably have to be in that second ring, the processes.

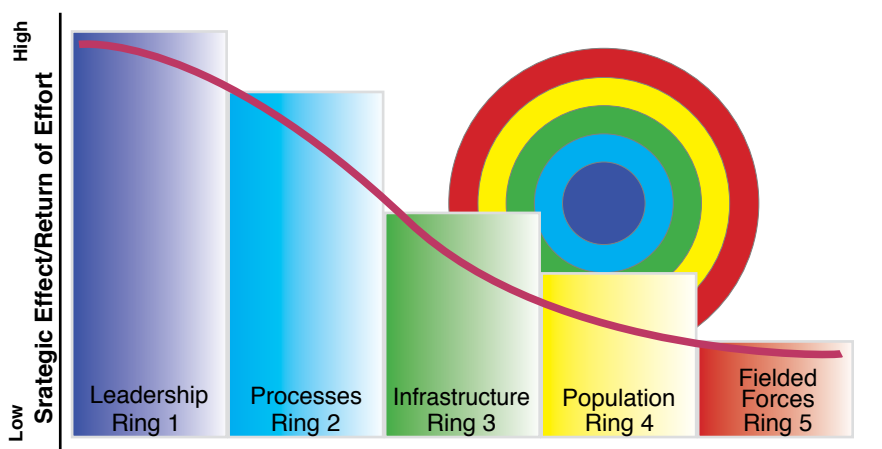
Now, we need to examine each of those elements listed under 'Processes' in Table 1:

- **Energy conversion.** These are things like hydro-electric dams or it could be a gas-fired or a coal-fired plant. It does not make any difference, they are all energy conversion. So, if you blow up all of the hydro-electric dams in Iraq, the electricity will go off, there is no question about it. However, your ability or the ability of the Iraqis to rebuild those dams is not going to happen within weeks or months or probably even years of the end of the war. So that is probably not a very good idea.
- **Electrical generation.** What about the second one, the electrical generation? Well, anybody that knows anything about attacking electrical systems and weapons effects will say, 'Hey, the obvious thing you do is you go and hit the generators themselves, perfect target'. Well, they are, from a pure military standpoint. The problem is the generators are also long-lead items. They are in short supply in the world and, if you knock out the generators, it again could be a very extended period of time after the war before the Iraqis are going to be able to recover.
- **Voltage control.** So that leaves voltage control. What is voltage control? Well, voltage control are the step-up transformers that are outside of every generation facility, and they simply boost the low voltage that comes from the generators themselves into high voltage in order to send it over the transmission lines with minimal losses. So you look at this and say, 'All right, if these things stop functioning, does the electricity go off in Iraq? Yes. Can the Iraqis fix it during the course of the war? Highly

unlikely. Can it be fixed relatively quickly at a relatively low cost when the war is over? Yes. It looks pretty good. Fine, there is the target.'

So, that is an example of linking a particular target all the way back to the 'win the peace' objectives, the end of the war objectives, that you really have. If you do not have the future picture, if you do not know that sort of thing, then you clearly go out and make some significantly different decisions than the one that we actually ended up making in this particular case.

The last step in dealing with the centres of gravity is figuring out what kind of weapons you are going to drop on them, what kind of aeroplanes or other kinds of things are going to be used. If you start with the aeroplanes or an assumption it is going to be a ground unit or special operations or whatever, you get yourself immediately lost in the tactical details and you never get back to the strategic level, where you have got to be when you are putting these things together.



**Figure 4: Strategic effect and return on effort by ring**

You are going to get a different return on your investment, depending on where you put your efforts (Figure 17). If you put your efforts primarily in the first and second rings, you are going to get a pretty good return on your efforts, your energy, your war operations etc. As you move out into the fifth ring, you find that you are spending more and more effort and you get less and less return. It does not mean that you do not have to deal with fifth-ring forces on occasions, it just means that that is not the most effective strategic place to deal with any kind of a problem. So, think about the first and second rings and then only go out into the others as required, and when you go out into the others know that it is going to be expensive, it is going to be time consuming and a variety of other things.



This then brings us to the whole concept of time. How much time do we really have? The dealing with time is something that is not done well in the strategic world, whether that is the business world or whether it is the military world. You have got to decide how much time you have to be successful. It is not how long it is going to take; it is how much time you have.

Let me give you an example. In the first presentation I made to General Schwarzkopf before the First Gulf War, I said, 'We think that it's going to take six to nine days of good weather operations to do the strategic attack on Iraq.' At the end of the briefing he came back to me and asked, 'How long did you say this was going to take?' I replied, 'Six to nine days.' And he said, 'That is exactly right. That's all the time we have, we have six days.' He then went on:

Let me tell you what's going to happen. On day one we're going to conduct our attacks and there's going to be all kinds of consternation. The media's going to start writing nasty articles about the United States attacking poor Iraq [remember this is before there is any coalition or anything else of that sort]. On the second day the General Assembly will meet. The third day they'll vote to condemn the United States. On the fourth day, they'll start the debates within the Security Council, and on the fifth day, the Security Council will vote to condemn our operations, and call for an immediate ceasefire. And although we will veto it, we're not going to be able to continue beyond the sixth day. We have six days!

General Schwarzkopf is one of the few people I have ever run into that really, really had a grasp of what the strategic essence, the strategic nature of time is.

So what you have to do is you simply have got to put parallel operations together in order to ensure that you have affected the centres of gravity within the time that you have available to you. Going back to Figure 18, the right strategic question is always, 'How much time do I have?' It is *never*, 'How long will it take?' How long will it take is a tactical consideration and it needs to fit into the strategic question of how much time do I have.

How we do go about it? Figure 5 depicts a simple illustration of parallel operations from the First Gulf War. Here is a very powerful Iraq before the start of the war showing a selection of some of the centres of gravity that had been previously identified. They came under parallel attack in a very intense operation beginning at midnight.



**Figure 5: Parallel attack – First Gulf War**

The results are that things have happened in days, not months or years. It has been done at a very low cost in blood and treasure, interestingly, for both sides. The Iraqis probably suffered less in that particular war than any country has ever suffered, given the scale of the loss; in other words, complete loss of the war. You break the system elastic limits, which simply means it is going down here and it is not going to just bounce right back up, which means that there is no competent system response. Once this has happened, it is driven down in a state of strategic paralysis and then you can kind of do whatever you want to do. If there are a bunch of chemical dumps that you have got to blow up, you have got plenty of time to do it and not much concern about anybody being able to interfere with that.

In World War II, and we had a good discussion on this earlier today, Eighth Air Force began its operations in January of 1943. In all of 1943, the Eighth Air Force only hit about 50 target complexes and on average hit one a week. And I would note that not only were they hitting just one a week, but the majority of them were in that third ring and out into the fifth ring area. This was something that was manageable on the part of the Germans. The point made in the earlier presentation was that it was very expensive because they had to bring so much back to defend themselves, but the Germans were able to continue functioning. Why? Because these targets were attacked serially. So a facility is damaged and what happens? The Germans send hundreds of thousands of people in to fix it. They then have a meeting of the Luftwaffe in Berlin or someplace else where everybody says, 'Okay, what did you see? What was the formation that came in with the B-17s? Who had some success? What's the better way to do it?' So next

time you go back, your enemy is a little bit better prepared and your enemy has also fixed some of the things that you broke. This can go on for a very, very long period of time because this is a serial operation.

The contrast is the First Gulf War where we hit 150 targets in the first 24 hours of the war. I would highlight that the majority of those targets were in the first and the second ring areas, with some also in the fifth ring. In this particular case, this is a thousandfold time compression over what had happened to the Germans. Nobody can withstand that kind of attack. Had we been manning Iraq, exactly the same thing would have happened to us as happened to the Iraqis. You simply cannot withstand this kind of a thing.

So, part of the idea is to impose this kind of strategic paralysis because we do not want our opponents to behave as thinking, competently reacting organisations. That is not our objective. We do not want competent reaction on the part of our opponents and, carefully thought through, there are ways that we can make sure that they do not react very competently.

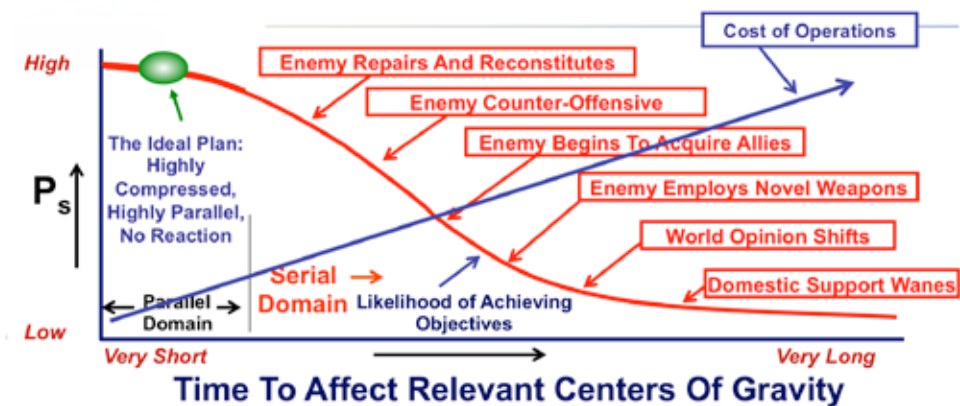


Figure 6: Time value of action

This brings us to the concept of what we call a 'time value of action' (Figure 6). On the vertical axis we are looking at the probability of success and on the horizontal axis we are looking at the time it takes to affect the centres of gravity that you have identified as being necessary to affect to get you to your future picture. If you want a high probability of success, then you conduct your attacks in that parallel domain in a very compressed way in order to create the equivalent of a strategic paralysis, and have a good chance of winning and at a pretty low cost. If you allow yourself to move out in time, then your probability of success falls off dramatically as all kinds of adverse things begin to happen. At the same time, your costs of operation—whether those are lost aeroplanes or whatever it may happen

to be—are going up and up. So, we want to operate back in that parallel domain, and make things happen as quickly as we possibly can.

Turning now to exits. Things are either going work well or not so well, and we need to think in advance about what the exit points are that are going to signal success or failure. Then we are going to need to build plans, in advance, for those success and failure points. We need to figure out how we are going to bring the war to a successful conclusion, presuming that it is moving in that direction. Exit planning is extraordinarily difficult. Nobody, or almost nobody, does it very well and people do not do a very good job of following it, even if they thought about it a little bit. But it can be done and must be done. So here are some examples, many of which we have already heard about today, where people had clear exit points, or should have, and yet utterly failed to deal with them.

First, the Germans do not get to Moscow by Christmas of the first year of operations. In pre-invasion planning, they said that they had to do it by December 1941. They did not but continued doing exactly the same thing.

Next is Admiral Yamamoto. We have already heard about Yamamoto. At the end of six months, we had actually begun a counteroffensive and there is no change in the plans on the part of the opponents.

Here, at an operational level, is Manteuffel in the Battle of the Bulge. He determined that he had to be at St. Vith by 17 December 1944, but he was not there. A very brave guy, he sends wire back to Hitler saying, 'This isn't working, we need to fall back to the West Wall'. And Hitler says, 'No, keep on doing exactly the same thing you're doing,' even though it was not working at all.

Lastly, here is the experience that we had in Somalia. We went into Somalia in 1991/92 in order to break the blockades that were leading to widespread starvation. That was very successful but we had no end point. So how are we to know it was successful and what are we going to do? We very quickly allowed ourselves to fall into the idea of, 'Well, as long as we're here, why don't we just go ahead and convert Somalia into a democratic place? To do that, we'll simply knock off this guy. Indeed, that ought to be pretty easy.' Well it was not very easy and it ran into the 'Black Hawk Down' situation and so on.

But exiting can be done, and I'll go through some examples, starting with Caesar Augustus. After a disastrous defeat in the Teutoburg Forest, he said, 'Okay, that's enough. We're not going to worry about Germany. The boundary will be on the Rhine.' The Congress of Vienna brought the Napoleonic Wars to a conclusion and led to a long period of peace. Then in the US 'War Between the States,' there was the extraordinary action on the part of General Grant, who said, 'General Lee, take your men and go home; just don't take up arms again.' Lastly, there was the Japan situation with General MacArthur and their transition from war to peace.

Once we put a war campaign together, now we can start thinking about an air campaign because now we have got the big picture. So how do we make that transition? If we have a war campaign plan then we are going to look at the centres of gravity we have identified and say, 'What's the best way to realise the desired effect? What are different possibilities?' We can then build an air campaign to deal with those centres of gravity where, clearly, air is the best solution. In some cases, maybe most cases, most of the military action will be air, in which case the air campaign and the war campaign are going to be virtually identical and, by the way, the exiting will be easier.

Air campaign methodology is always future back, reviewing and confirming the future picture. Again, there is this emphasis that, if you do not have the future picture, you have got to create it and either sell it or say, 'Nobody's going to tell me, but we've got to have something we can work on for a future picture.' If you do not, you are out doing 'stuff' and that is probably not going to get you to a happy conclusion. Next, review and confirm the centres of gravity, and add additional centres of gravity as required for things like suppression of enemy air defences etc. Figure out what your best weapons are in order to accomplish what you want, keeping in mind the end of the war peace that you are trying to achieve. Lastly, keep it short—and I would stress keep it short—and get out at the right time and place.

I want to finish off with just a couple of what I consider to be my 'campaign lessons' that are derived from own personal military experience, a lot of reading and also similar experience in the business world.

First of all is this strategy methodology, the four questions—the where, what, how, exit thing. This methodology seems to be pretty solid in theory and it works well in practice. If you go through it, you end up with something that is reasonably strategic; if you do not go through it, you might or you might not.

Centre of gravity thinking clarifies and simplifies what you are trying to do. If you do not have some methodology to think about what the centres of gravity are and how they relate to your future picture, to your war objectives, you do not have any good way to come to a resolution.

Air campaigns work when they are used to achieve militarily feasible objectives like 'prevention.' They do not work if you are going out and saying that we are going to use an air campaign to impose our will on the enemy, to break the enemy will to resist, to turn them into good Democrats, or whatever it may happen to be. That means that the primary focus really needs to be on the physical, not on the psychological. It does not mean that you are not going to do something on the side on the psychological, but the psychological simply does not have the same probability of delivering results that the physical kind of thing does.

Short is good, long is bad, and we should use parallel attack. This concept really goes back a long way. We can talk about Sun Tzu making the observation that no country ever benefited from prolonged warfare. Now, he did not say no country ever *won* a long war. He said no country ever *benefited* from prolonged warfare, and I think that that is still an accurate statement. So accurate in fact that, if you cannot do it fast, you ought to consider not doing it at all. This means, from the standpoint of air campaign planning, if you find you put a plan together that lasts a long time, say that is too long. You have got to go back and say we do not have the effective tools to do this or we are going to go back and rethink the whole thing and figure out a way to compress our time until we get it down to within the time we have allocated to ourselves.

To be successful in any kind of a competitive environment, particularly in a war environment, you would really like to have pretty good plans. Ideally, you would like to have a great plan. Unfortunately, great plans do not frequently flow from bureaucratic kinds of committee systems. So what that really says is that all of us, when we are in those sorts of positions, cannot be afraid to take a coherent position even though it is not something that the committee, as a whole, is going to be real enthusiastic about until it is well presented and well documented.

I would conclude by saying that I think that you can achieve an enormous number of things with a good air campaign plan, as long as it is focused on things that can actually be achieved with force. If it cannot be achieved with force, there is no air campaign plan in the world that is going to make it work.

The second thing is that you want the air campaign plan to be as strategic as you possibly can make it, and that means really thinking it through strategically and going through some kind of a methodology to ensure you know where you are going to end up, what you can put your resources against, how much time you have and then how you are going to get out from a lot of different situations.

With that, I am more than happy to take any questions, comments, arguments, debates or anything else that may be out there.

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## DISCUSSION

*Air Vice-Marshal Bob Richardson (RAAF Retd):* Your very last point really struck a chord with me when I was thinking of the difference between the sort of planning you're talking about being done in a dictatorial society versus a democratic society like your own. Would you like to comment on the fact that the points you make would be so much easier to be done by a country like China

and the way it's governed than by the liberal, democratic process that we have in a Western democracy?

*Colonel Warden:* That's an interesting question. I'm not sure that the hypothesis is correct, however. If we look at the operations that, say, the Germans conducted, they were absolutely as bad at planning, even given their dictatorial system, as anybody else. In fact, they were worse, when you really get down to it. Excellent at a tactical and operational level and abysmal at a strategy level, in part, I think because there wasn't any kind of democratic sort of atmosphere at a strategic level where somebody could say, 'Hey, Mr Hitler, you're not going on the right track.' And let me explain why that is strategically wrong. I think that in a democracy that there's no problem in doing good planning as long as you can actually lay out the ideas in a form that people can understand and in a form that political leaders, in fact, can take to their constituency and say, 'This is what we're trying to accomplish and I need your support on it.' So I would say that, from a strategic standpoint, I would rather be trying to put something together in a US/Australian kind of an environment than I would in a Chinese environment, because I think in a Chinese environment there's a high probability that they may head off in a direction that isn't well thought through and, very probably, isn't better.

*Air Vice-Marshal Ray Funnell (RAAF Retd):* I want to raise the word itself, 'strategy'. It's now used widely, frequently and mostly inaccurately to the detriment, I think, of strategic thinking. We hear people using strategy in a way that is totally opposed to the ideas that you put forward here—'What's your unswerving strategy for this week?' It really has devalued the term in such a way that strategy itself is losing its impact. How can we recapture that so that we can get people thinking in strategic terms in the ways that you have just described?

*Colonel Warden:* Air Marshal, an excellent point. As is the case with a lot of words, we have devalued it and when you say 'strategy' it may mean something to one person and something completely different to someone else. The approach we've taken in business and in the military also is to say look we have a lot of debates about strategy and so on but what I like to do is to focus on a strategy methodology. So we say that if you know where you're going to end up, if you know what you're putting your resource against, if you know the time, if you know how you're going to get out, that all together constitutes strategy. And you wouldn't be doing it if you didn't want to get to some place better than where you are now. That's the 'where' and the rest of it simply works back. So, by avoiding too much of the theoretical semantic discussions of the word and saying, 'Okay, that's fine, whatever, but this is something that will work for you. This then we'll call strategy. Let's give it a try.' That seems to have worked out reasonably well, in my case at any rate.

*Air Commodore Owen (RAAF Retd):* I looked at a couple of the graphs you put up there in terms of your five rings, and you talked about pay-offs from approaching

those strategic points within those rings. But there'd be another graph that would be almost opposite to that, which would carry strategic risk as you target particularly population, processes and leadership. So how does that work, in terms of your very high-level campaign planning, against that decreasing graph? Would you have an opposing and opposite increasing risk graph?

*Colonel Warden:* I'm not sure that I accept the premise but it's well worth considering. I think you could say that the risk curve actually would be exactly the opposite and that the lowest risk operations actually are against those highest pay-off kinds of operations. Let's take [Emperor] Marcian and the Byzantine Empire. It was a heck of a lot less risky to send a guy out there with a knife, or whatever it was, to assassinate Attila the Hun than it was to go out there and mount an army and try to take on some very, very competent opponents, so the risk was relatively low. As you move out to the fifth ring, probably the most risky operation that you can undertake in war is where you allow yourself to get stuck simply going force-on-force, in that attrition war kind of area, which is virtually impossible to predict. Numbers don't mean a whole lot and in many ways, it turns out that it is down to luck. So I think you're right, the risk is the obverse of the effectiveness, the return on investment. It's a great idea, thank you.

*Squadron Leader Matthew Xerri (RAAF – Joint Operations Command):* If I'm reading your lecture right, you spoke about the war campaign and then, from that, the air campaign will follow. Does that mean that, without a proper war campaign, we don't have the air campaign? And secondly, would there be a risk of both campaigns diverging in terms of the air campaign going off and doing its own thing, without a feedback loop or assessment going on?

*Colonel Warden:* What I wanted to convey with that is that the war campaign is sort of the 'big picture', and it subsumes anything else. I mean, there might be a naval campaign or there might be a ground campaign underneath it but, whatever that next level down is, it has got to fit within the war campaign. What I believe is important is that we need to start with the big picture campaign and make sure we've got that right. Then we can build an air campaign or a naval campaign or whatever it may happen to be. We talked about this in some detail was at a fairly high-level doctrine conference some months ago at Maxwell [Air Force Base] and there was a lot of discussion about what doctrine was. Several of the people that were attending this particular conference said that they thought that a doctrine ought to be whatever supported the joint commander's concepts. And then a couple of us said, 'That doesn't make any sense. Why would we be putting doctrine together that was oriented against a subordinate goal? Shouldn't the goal of doctrine be to allow us to use air power, or whatever, in the most effective way in order to get victory, to get success in war?' If you agree with that, then the real purpose is to figure out doctrine that will give you success, which then will be something that ought to be amenable to a joint force commander, or whatever



it may happen to be. And, if it isn't, you simply have an issue which has got to be resolved in one form or another. But the war campaign concept, the 'win the peace' concept, is the overarching thing and all other campaigns have got to be part of it. Now, in some cases, it may be only an air campaign, which becomes equivalent to the war campaign, or it could be a navy campaign.



# THE RISE, FALL AND RISE OF SOVIET/ RUSSIAN AIR POWER

DR SANU KAINIKARA

## INTRODUCTION

*We can assert it with confidence that any state that does not possess a strong, properly organised, well trained and prepared air fleet is doomed to defeat.*

Mikhail V Frunze<sup>1</sup>

The Russian Air Force claims the mantle of the erstwhile Red Air Force of the Soviet Union as its logical successor. This claim provides the Russian Air Force with a long and illustrious history backed by established customs and traditions. The collapse of the Soviet Union and the accompanying turmoil that engulfed the Russian nation was paralleled in the military forces and felt rather acutely within the Air Force. The disintegration of the Warsaw Pact and the end of the Cold War deprived the Russian Air Force of a clear threat perception to guide its training, acquisition and force structure planning. Almost overnight the Russian Air Force had to contend with new responsibilities beginning with the defence of a vastly changed border area, combined with a radically changed security environment.<sup>2</sup>

To state that the Russian Air Force was traumatised by the aftermath of the Soviet collapse may perhaps be an understatement. The financial and geo-strategic constraints that accompanied the collapse forced the Air Force leadership to completely stop force modernisation, reduce training to the barest minimum with its attendant challenges, and accept a massive drawdown through combining multiple functions. In fact, in the absence of an articulated foreign policy at that time, the Air Force could not focus on any particular threat. Consequently, they had to develop new doctrine and operational concepts that would be appropriate for the new realities of Russia's post-Cold War security requirements. However, the Soviet Air Force had successfully withstood the surprise onslaught by Nazi

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1 Mikhail V Frunze, *Izbrannyye Proizvedeniya* [Selected Works], Volume 2, Voenizdat, Moscow, 1957, p. 328.

2 Benjamin S Lambeth, *Russia's Air Power in Crisis*, Smithsonian Institution Press, Washington, DC, 1999, p. 1.

Germany and rose out of the near disaster within four years to become the world's largest tactical air force. Although the post–Cold War situation cannot be compared to the situation in World War II from a national survival perspective, the conditions were similar as far as the immediate near-term coherence of the Air Force. However, the challenge also provided Soviet combat air power with an opportunity to embark on 'an accelerated passage to modernization and power'.<sup>3</sup>

This paper analyses the rise of Soviet air power, followed by the post–Cold War loss of capability and then the resurgence and the improving fortunes of the Russian Air Force in the past decade. This will be done by following two distinct themes. First, it provides an historical background of the development of the Soviet/Russian Air Force over the past century. Second, the paper examines the developments through the thread of continuity in the Soviet/Russian philosophy of war and the doctrinal developments that have shaped the Air Force. In doing so, attention has been paid to the evolution of the nation's security perceptions and their impact on military doctrine, with particular emphasis on air power doctrine. Having done this, the paper draws out the lessons that can be deduced from this study of Russian air power that have application to air forces in general. The narrative follows a broad chronological order so that the dual strands of history and doctrinal development for the past 100 years can be readily understood.

The paper will be divided into six parts—the Soviet philosophy of war, the history of the Soviet/Russian air power development, military doctrine and military art in the Soviet/Russian military forces, the decline and transformation of the Russian Air Force in the post–Cold War period, the blueprint for the 21st century, and major lessons to be drawn.

## THE SOVIET PHILOSOPHY OF WAR

There are various views regarding what comprised the major intellectual underpinnings of Soviet military thought. The two most important influences have been a mechanist view of Marxism-Leninism and, secondly, the defensive paranoia within the entire nation as a result of frequent invasions of the nation through centuries. After the Bolshevik Revolution, Marxism-Leninism provided the prism through which national security and, at a subordinate level, military policy were refracted. The combined consciousness of the Soviet/Russian people harbours a distinct understanding of the devastation that wars can cause and, therefore, there has always been a prevalent culture of the study of war as a social

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3 Von Hardesty, *Red Phoenix: The Rise of Soviet Air Power, 1941–1945*, Smithsonian Institution Press, Washington DC, 1991, p. 8.

phenomenon, and not purely the professional aspects of its conduct.<sup>4</sup> This thought process made war an accepted element of policy and provided an intellectual hegemony to the senior leadership, both civilian and military. In this paper, the details of the Communist Manifesto of 1849 that underpins the Marxist-Leninist thought are not being discussed in detail.

In the immediate aftermath of the Revolution, Lenin accepted the Clausewitzian view of war as politics and an instrument of policy. He substituted Clausewitz's trinity of people, probability and governance with class, probability and party. This substitution effectively subordinated the class to becoming an instrument of policy. Lenin's view was not the same as explained by Clausewitz because of the slightly different understanding of politics and the inherent class nature of it that was entrenched in Soviet thinking after the Bolshevik Revolution. By substituting the trinity, Lenin created a Soviet model of Clausewitz's theory that was effectively an inverted version which based politics on war—the Revolution was the 'war' and therefore politics was based on war instead of war being an extension of politics as is universally understood. This situation created a complex relationship between war, politics and military strategy. Political ideology that had an overarching role in 'revolution', which was war, therefore had an essential hegemony over strategic military thought.

Stalin was totally committed to the international workers' revolution and saw the military as a tool of foreign policy to achieve the maximum advantage to the Soviet state while remaining outwardly removed from international affairs. The global decolonisation that followed World War II was seen by him to be an opportunity to further world revolution and he steered the national strategy towards what he believed to be the ultimate lever to disintegrate imperialism.<sup>5</sup> The years immediately following the death of Stalin on 5 March 1953 saw momentous changes in the political and military establishments within the Soviet Union. For the next decade the Soviet Union laboured under an inherent feeling of insecurity and nurtured a military strategy aimed at protecting the workers of the world and crushing any aggressor.<sup>6</sup>

Brezhnev came to power in 1964 and brought stability to the national security structure, which provided clear guidelines to the military regarding its planning and concept development. The military planning was based on the assumption

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4 Christopher Donnelly, *Red Banner: The Soviet Military System in Peace and War*, Jane's Information Group, Coulsdon, 1988, pp. 102–104.

5 Historicus (George A Morgan), 'Stalin on Revolution', Alexander Dallin (ed.), *Soviet Conduct in World Affairs: A Selection of Readings Compiled by Alexander Dillon*, Columbia University Press, New York, 1960, pp. 167–168.

6 William G Andrews (ed.), *Soviet Institutions and Policies: Inside Views*, D. Van Nostrand Co. Inc., Princeton, NJ, 1966, p. 403.

that the Soviet Union would face a combined attack from the capitalist nations operating as a huge hostile coalition. It was also acknowledged that such a situation could lead to a world war. By the 1970s, the Soviet Union conceded that the possibility of any conflict escalating into a nuclear exchange was remote and the focus of development shifted noticeably to conventional military capabilities. However, the strategic doctrine and the concept of operations remained firmly committed to undertaking offensive action from the very beginning of a conflict. The primacy of the offensive in military operations has been asserted in several papers and monographs written by senior Soviet military leaders. This remained true for the entire Cold War era.

### **SOVIET DEFENCE ORGANISATION**

The organisation of the defence forces was influenced by the Tsarist traditions and observations of the contemporary Western military forces, superimposed by Marxist-Leninist political compulsions. The apex organisation in the Soviet military was the Ministry of Defence and its General Staff. Commanders of all the military services doubled as Deputy Ministers in the ministry and therefore were part of the apex body. The senior leadership of the ministry met frequently and could be equated to a military council. The system has its antecedents in the functioning of the pre-Revolution Imperial Russian Army.

The General Staff was created in the Soviet Union by Stalin in 1935, modelled on other European military forces. In the Western armies, the concept of the General Staff goes back to the 19th century when the increasing complexity of modern conflict was acknowledged. The rise of the General Staff to prominence simultaneously laid the foundation for military professionalism. In the Soviet Union the General Staff controlled all arms of the military as well as resource allocation to them. The combination of both functional and economic control by the same body led to the entire military forces being fully controlled by the Ministry of Defence. In war, the General Staff exercised control and direction over all operations of the entire Soviet military forces, and in times of peace they had two major functions. One was to develop the force structure of all branches of Services and thereafter to equip, train and sustain them through developing the doctrine for the efficient employment of the armed forces. The second was to directly manage the extant forces that were deployed for war contingencies.

The Soviet military forces were divided into five independent Services as opposed to the traditional three environmental Services—Navy, Army, Air Force, Air Defence Force and the Rocket Force. There were four high commands radiating outward from Moscow over which a Theatre of Operations concept was superimposed. Further, separate military districts functioned almost like a second layer ministry of defence. The final result was that although the General Staff exercised direct operational control over the military broadly, the lower level

operational units were under the command of different agencies—a less than optimum situation for efficient force structure planning and, more importantly, detrimental to effective warfighting.

## SOVIET/RUSSIAN AIR POWER

Military aviation has a rich tradition in Russia that predates the 74-year intercession of Soviet Communism. For example, the first loop manoeuvre in the world was carried out by Major Pyotr Nesterov in 1913 and the world's first four-engine strategic bomber the 'Ilya Muromet' was designed by Igor Sykorsky in Russia. The Soviet Union also led the way in jet aviation in many ways, introducing the MiG-15 to operational service in 1948. The MiG-15 can be considered the first high-performance fighter aircraft in modern terms and proved to be more than a match for the famous F-86 Sabre during the Korean War. In its heyday, the Soviet aviation industry was a global giant.

### EARLY DEVELOPMENTS

The Soviet Union claimed that a manned flight had taken place in St Petersburg in 1884. However, this claim has to be discounted because of lack of positive proof. Such nationalistic stances were common during the Soviet era. The confirmed first flight in Russia was in July 1907. The 1908 Annual Report of the Russian War Ministry states categorically that:

Although airplanes can at present still not make very long flights or rise to any great heights, and in general they are not suitable for military purposes, in the future they will nevertheless play a tremendous role in military affairs and so undoubtedly be introduced into the armament of the army.

Thereafter, the Russian Army paid a great deal of attention to aviation, establishing 'aerostatic parks' in 1909 to train officers in flying and to make them 'air-minded'. There was wholehearted support from high ranking military officers for the development of aviation. The Grand Duke Alexander Mikhailovich was sufficiently impressed with the capabilities of aircraft that he remarked, 'Victory in a future war will be impossible without an aerial fleet.'<sup>7</sup> In 1910, the Army imported Wright Biplanes and English Bristols while the first helicopter designed and built by Sikorsky took to the skies. In comparison, the United States military establishment had only acquired one Wright airplane by 1910.<sup>8</sup> By 1912, the need

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7 Alexander, Grand Duke of Russia, *Once a Grand Duke*, Cosmopolitan Book Corporation, Farrar & Rinehart, New York, NY, 1932, pp. 237–238.

8 Robert A Kilmarx, *A History of Soviet Air Power*, Faber and Faber Ltd, London, 1962, p. 5.

to have an overarching authority to oversee all military aviation activity was recognised and the Aviation Division was created. However, the Imperial Russian Navy was permitted separate and independent control of its aviation elements. The military air units were assigned to the Army at the corps level under one area commander.

Between 1912 and 1914 the Russian air services made steady progress in equipment, technology and organisation, although the improvements were not rapid enough to cater for the demands placed on them at the outbreak of World War I.

## **WORLD WAR I**

When war broke out in 1914, Russia's front-line aircraft strength was an impressive 244, compared to Germany's 232 and France's 138. However, most of the Russian aircraft were obsolete, and perhaps more importantly, the indigenous production rate was only about 400 aircraft per year, whereas the German production rate was in excess of 1300 aircraft per annum.<sup>9</sup> Further, the Russian aircraft were inferior in performance. This state of affairs forced the Russian high command to import French machines to make up for the lack of capability. However, the French provided aircraft that were considered unfit for French use, thereby relegating the Russian Air Arm to a secondary status. The indigenous four-engine bomber—the Sikorsky 'Muromet'—flew in excess of 400 sorties, dropping around 2000 bombs.

The participation of the Russian military in the War was cut short by the Bolshevik Revolution. However, the combat performance of the Russian Air Arm was clearly inferior to the performance of the flying corps of any other participating nation. Shortage of aircrew, faulty training schedules and inferior equipment contributed towards this rather pathetic state of affairs. However, the silver lining in this cloud was the assimilation of an important lesson by the military and national leadership—the disadvantage of relying on foreign sources for military equipment. This was to have long-term implications for the Soviet policy decision. It is seen that a distinct distaste for military equipment imports developed within the ethos of the decision-making bodies at the highest levels of national security. This is so even in today's Russia.

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9 David R Jones, 'The beginnings of Russian air power, 1907–1922', Robin Higham & Jacob W Kipp (eds), *Soviet Aviation and Air Power: A Historical View*, Brassey's Publishers Ltd, London, 1978, p. 20.



## **THE BOLSHEVIK REVOLUTION AND AFTER**

Even though the spread of the revolutionary ideas was the slowest within the Imperial Air Arm, their impact on Russian military aviation was profound and far-reaching. A majority of the qualified aviation experts—both flyers and engineers—sought asylum outside the Soviet Union.<sup>10</sup> The industry suffered disastrous consequences with a large number of designers and engineers being imprisoned and executed, and manufacturing facilities destroyed. The recovery from the deterioration of capabilities as a result of this combination of a 'brain drain' and loss of facilities was long and arduous.

After the success of the Bolshevik coup, the Red Army was officially formed on 23 February 1918 with the Air Force as an integral part. The Air Force at this stage had about 350 aircraft and only took part in limited operations in the Civil War that ensued. Since there was no opportunity or facility to manufacture new aircraft, by the end of the war the Red Air Arm was almost completely run down and there was an acute shortage of trained flyers. However, a separate supply and repair organisation dedicated to the Red Air Fleet evolved during the Civil War and was subsequently subsumed into the Chief Administration for Aircraft Industry within the Supreme Council for National Economy. Through the chaos of the Civil War an embryonic organisation also evolved with the Red Air Fleet structured in groups containing two or more squadrons, essentially in support of ground operations.

A number of salient points came out of the Civil War that influenced Soviet air power during the subsequent consolidation of power by the Communists. First was that the Soviet leadership gained a clear appreciation of the potential of air power as a military capability that in turn influenced far-reaching decisions on the structure and capabilities of the Soviet military forces. Second was the acceptance of the need to have a separate command and control structure for the Air Fleet, different to that being followed in the Army, as well as the unique training needs of an air force. This could be thought of as tacit acceptance of the separateness of air operations. Third, the importance of coordination between air and land forces to achieve battlefield victory was seen as a cardinal principle in the further development of operational concepts. This led to the subordination of some of the air units to Army command in the reorganisation. Fourth, while the principle of centralisation of command to ensure concentration of force was understood, its implementation was flawed. The air units continued to be controlled by Army commanders with the effect that their utilisation was not optimised to create an overarching element of air power as an entity. Further, the concept of semi-autonomous land units operating parallel to the regular chain of

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10 Kilmarx, *A History of Soviet Air Power*, p. 27.

command was superimposed on the air units, which is completely contrary to the well-understood tenet of centralised control of air assets. This is a dichotomy and a clear case of basic doctrine being superseded by a pragmatic approach to the application of air power.

The conclusion that can be drawn is that local political imperatives influenced the organisation of the Red Air Force, even at the cost of casting aside sound doctrinal tenets. This provides an insight into the all-enveloping influence that political ideology played on the evolution of air power doctrine at the strategic level and capability development of the Soviet Air Force at the operational level.

### THE SPANISH CIVIL WAR

The Soviet assistance to the Loyalists in Spain arrived too late to make any difference to the final outcome of the Civil War. However, the Soviet Union sent a force of over 1000 aircraft, associated personnel and equipment which operated independent of Spanish control.<sup>11</sup> Air power was only used as an auxiliary support element. The Soviet Air Force conducted few bombing raids that did not create any visible damage to the targets. However, they took back two fundamental lessons from the limited exposure to air operations that they received in the Spanish Civil War. They came to an incorrect conclusion that strategic bombing was ineffectual without taking into account that the failure in this instance was due to technological inefficiencies and not because the concept was flawed *per se*. This wrong conclusion made the Soviet Air Force stop the development of strategic bombers, a design process in which they were at that time superior to most other nations. This decision was to have disastrous consequences at the initial stages of World War II. Essentially, from the withdrawal of Soviet forces from Spain and throughout the duration of World War II, the Soviet Air Force remained a tactical force always in support of the land forces.

The second lesson came with the clearly demonstrated technological inferiority of Soviet equipment. The Soviet Union thereafter embarked on an aggressive quest to obtain technologically superior and sophisticated equipment and then to reverse engineer them to absorb the technological nuances. This is similar to the process being followed by China in the military engineering field today. The fundamental failure was the inability to grasp the strategic potential of air power and the effectiveness of a strategic air campaign.

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11 William Green & John Fricker, *The Air Forces of the World: Their History, Development and Present Strength*, Hanover House, New York, 1958, p. 249.

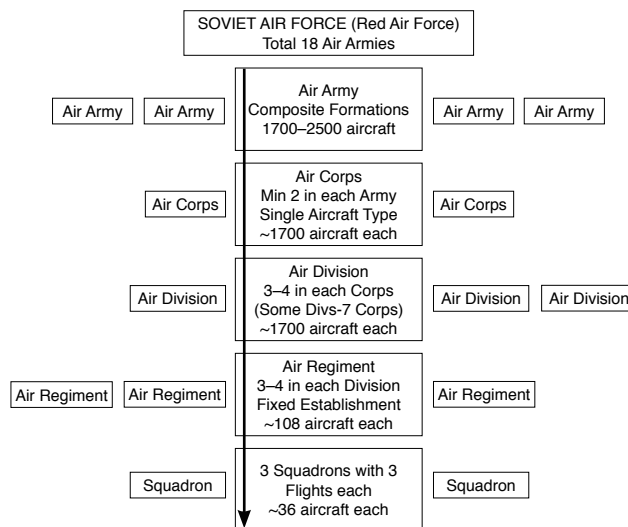
## WORLD WAR II

The German invasion of the Soviet Union was the greatest test in its history not only of the capabilities of the Red Air Force ... and of the doctrine of combined-arms warfare but also of all aspects of Soviet state power.

Robert A Kilmarx<sup>12</sup>

When German forces attacked the Soviet Union on 22 June 1941, the Soviet military forces were in the midst of a fundamental reorganisation and expansion process. The Long Range Aviation headquarters to command the long-range bomber force and a separate airborne forces command had just been created. The Soviet Air Force was under the operational command of the ground forces commander and was considered a subsidiary, although an essential part of the ground-air team. The Air Force was organised into Air Armies, each with approximately 1400 aircraft, although some of the formations had as many as 2500 aircraft. These semi-autonomous Air Armies provided greater flexibility to operational planning and deployment of air assets. By this time the Air Force was clearly divided into Long Range Aviation, Military Transport Aviation and Frontal Aviation.

The broad organisational chart of the Soviet Air Force during World War II is given below:



**Figure 1: Soviet Air Force – World War II Organisation**

12 Kilmarx, *A History of Soviet Air Power*, p. 171.

At this stage the doctrinal developments within the Red Air Force were also in a state of flux. There was understanding regarding the concept of strategic bombing but the general trend was to visualise aviation as an integral part of the combined arms concept with a heavy bias towards close air support. Stalin had concluded from the flawed lessons that were drawn from the brief Soviet intervention in the Spanish Civil War that the value of air power lay in its ability to provide close air support to the Army rather than in long-range strategic bombing. Accordingly, by 1939, the Soviet Air Force doctrine was firmly rooted in its subordinate role of tactical support to ground operations.<sup>13</sup>

The air combat operations undertaken by the Red Air Force in World War II can be divided into three distinct phases:

- The beginning of the war to November 1942 – stemming the tide.
- December 1942 to December 1943 – air superiority.
- Early 1944 to the defeat of Germany in May 1945 – maturation of the Red Air Force.

#### **FIRST PHASE – STEMMING THE TIDE (UP TO NOVEMBER 1942)**

The initial German attacks were so successful that the Soviet Air Force in the West and North were almost completely destroyed on the ground. A total of 48 per cent of aircraft holdings were destroyed on the first day itself. The Soviet aircraft in forward airfields were not dispersed or camouflaged, which made it easier for the Luftwaffe to carryout successful attacks. The Germans had both technical and operational superiority and gained air superiority almost immediately. However, the Luftwaffe was unable to capitalise on the defeat that had been inflicted on the Soviet Air Force and could not completely eliminate it. The limited strategic bombing that the Luftwaffe carried out was insufficient to create any long-term detrimental effects on the Red Air Force. They were essentially geared to obtain battlefield superiority in what was presumed to be a short campaign: in effect, a Blitzkrieg campaign. By the winter of 1941, the Soviet Air Force was in a much better condition and also more prepared and acclimatised to the harshness of the weather. It was now able to support the Red Army's counter offensive and field more than 1500 Il-2 ground attack aircraft for the purpose.

From the initial debacle to gradually stopping the German advance, the Soviet Air Force gained a great deal of experience and also carried forward some important lessons. First was the fact that the Air Force needed to always maintain a certain amount of reserve elements in waiting in order to have the flexibility to

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13 Sanu Kainikara, *Red Air: Politics in Russian Air Power*, Universal Publishers, Boca Raton, FL, 2007, p. 133.

concentrate force at the time and place of its choice. Second, the central control of air assets provided greater effectiveness in their application, as opposed to air power being penny-packaged under different command authorities. Third, the importance of a flexible and uninterrupted logistics chain to conduct effective operations, especially one of essential movement, was clearly appreciated. Fourth, the vital importance of air-ground coordination to achieve overall victory in a battle, operation or campaign was accepted. Learning from the experience gained, it was decided to streamline the operational conduct of the Air Force. The initial step was to make the Air Divisions within the Air Armies into completely homogenous formations.<sup>14</sup> This simplified training and maintenance of the fleet and afforded greater operational efficiency and flexibility. With these changes, the Air Armies became balanced operational formations with the built-in flexibility necessary to alter their composition and operational emphasis.

#### **SECOND PHASE – AIR SUPERIORITY (DECEMBER 1942 – DECEMBER 1943)**

During the winter months the Soviet Air Force adapted much better to the poor flying conditions in comparison to the Germans, destroying over 5000 Luftwaffe aircraft in the 1942–43 winter offensive alone. The Soviet aviation industry had by now gone into overdrive and the Air Force was equipped with newer model aircraft and by this time was beginning to have numerical superiority. In November 1942 alone, over 2000 aircraft were averaging between 5000 and 6000 sorties per day. The industry output can be visualised by the fact that in the summer a mere 33 per cent of aircraft in the conflict were newer models, whereas by the winter 97 per cent of the fighters and 73 per cent of total holdings were newer models with enhanced performance.

By the summer of 1943, the Soviet Air Force was battling to wrest air superiority from the Luftwaffe over the Kuban Peninsula. This was the turning point in the air war. At this stage the Germans were finding it difficult to provide replacement for the attrition that was being inflicted, both in terms of aircraft and pilots. On the other hand, the Red Air Fleet had been stabilised in terms of its numbers, improvements in aircraft performance, development of operational tactics, and quality of aircrew training. To add to the Germans' woes, the Soviet Air Force had by now perfected the use of fighter air divisions to clear the way for massed assault through a combined bomber and ground offensive.<sup>15</sup> The doctrine of the air offensive—massed air action to provide unrelenting and continuous air support to mobile armies on the ground—had by now been trialled, accepted and, to a large extent, perfected as the way forward. The Frontal Aviation became the most

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14 Colonel EK Fedorov, *The Red Army: An Army of the People*, Cobbett Publishing Co., London, 1944, pp. 32–43.

15 Kainikara, *Red Air: Politics in Russian Air Power*, p. 141.

effective fire support team for the fast-moving manoeuvre warfare and critical to its overall success.

The Battle of Kursk in June 1943 was the proving ground for the changes that had been instituted in the Red Air Force—in organisation, design and performance of aircraft, training schedule of pilots, fighting tactics at the operational level, and perhaps most importantly the sophisticated doctrinal changes that were spread across the entire force. There is a wrong perception that has prevailed for some time to be corrected at this juncture. There is a contention that the Soviet Air Force won the air war purely on account of its numerical superiority, while the efficiency of the force as a whole played only a very limited role in its success. The accounts of the air war and the Soviet conduct of it written during and immediately after World War II invariably portrays the Soviet pilots as inferior in flying ability with slavish adherence to outdated tactics drilled into them. They are reported to have been almost totally devoid of individual initiative. This perception is wrong and nothing could be farther from the truth. The Soviet aircrew, by all accounts given by their German opponents, were both courageous and skilled, earning the respect of everyone they met with in the sky in combat. This myth of the rigidity in thinking of Soviet aircrew who slavishly followed an outdated doctrine continued to be perpetuated throughout the Cold War.

### **THIRD PHASE – MATURATION OF THE RED AIR FORCE (EARLY 1944 TO GERMAN DEFEAT)**

By January 1944, the Soviet frontal advances extended from the Black Sea to Leningrad. The main Central Offensive was held back to ensure that the Allied invasion of France was well underway, starting only 20 days after the Normandy landings. By this time the Red Air Force and Army jointly had developed a pattern of offensive operations. The Red Air Force would gain air superiority over a sector through which the Army was expected to make its initial offensive thrust. This was achieved in three phases, which at times overlapped, dependent on the urgency of the ground offensive. The first phase started well before the major offensive, at times as much as three months before the actual launch of the offensive, and was primarily stepped-up reconnaissance efforts. The second phase was increased air attacks behind enemy lines, primarily targeting command and control centres, and transportation and communication hubs. The third phase consisted of fighter operations to gain air superiority and provide an air umbrella over the land forces, operations that were intensified immediately before the offensive breakout of the Army. The breakout itself was supported by intense close air support over and above the fighter operations.

This part of Soviet operations in World War II saw the entrenchment of the concept of concentrated air support being provided to the advancing armies. The concept required the Soviet air elements to operate from semi-prepared surfaces

in close proximity to the actual front in which the Army was conducting its battle. The final Soviet offensive of the war saw five Soviet Armies and about 7700 aircraft moving 100 miles a week on a 400-mile front. The greatest Soviet air effort of the war is recorded on 16 March 1945 when the Red Air Force flew a total of 17 500 sorties.

Statistics of the Battle for Berlin provide a graphic picture of the air effort that the Red Air Force had become capable of providing on a routine basis, in a short span of just five years. It shows the single-minded development of air power that the Soviet Union had embarked upon on commencing operations in the war. In the two-month Battle for Berlin, the Luftwaffe fought with distinction and desperation, flying more than 1100 sorties every day and sustaining a daily loss of over 200 aircraft. At the same time, the Soviet Air Force was averaging 15 000 sorties daily. In April alone the Red Air Force carried out in excess of 215 000 sorties, and dropped 45 000 tons of bombs on enemy targets. In the last 17 days, the Frontal Aviation alone flew 91 384 sorties and claimed 1232 aircraft destroyed on the ground, and was successful in 1317 air combat engagements with more than one enemy aircraft shot down in a majority of them, while sustaining only a total of 527 aircraft lost to enemy action and other accidents. At the time of the German surrender, the Soviet aviation factories were capable of a production rate which forced the high command to hold new aircraft in reserve as the Air Armies were already fully manned and replenished.

## **LESSONS FROM WORLD WAR II**

The Great Patriotic War, as the Soviet Union termed World War II, provided a number of lessons to the Soviet Air Force. These lessons formed the foundation for the development of a dedicated doctrine for the application of air power. First, the all-encompassing criticality of air superiority and control of the air was well articulated and accepted as a fundamental necessity for all other operations to succeed. However, the doctrine was still vague regarding the utility of strategic bombing. Second, flexibility and adaptability at the strategic levels of command were instituted as prized characteristics. This was in sharp contrast to the development that took place subsequently at the tactical level of command that did not permit either any innovative developments in the actual application of air power or allow for deviations in accepted tactics while engaged in combat operations. Gradually this *modus operandi*, wherein extreme flexibility at the strategic level was supported by staunch rigidity at the operational and tactical levels, became the standard operating concept within the Air Force. This dichotomy and its debilitating effect in diminishing the operational efficiency of the force were to plague the Red Air Force for a long time.

Third, the Red Air Force realised that its organisational flexibility was one of the crucial factors that contributed to the victory in World War II. Therefore, the

new doctrine that was developed emphasised the need to maintain organisational flexibility, while continuing to adhere to the demand for operational and tactical rigidity. Once again this dichotomy has not been adequately explained in any of the analyses that have been done regarding the operational doctrine of the Soviet Air Force.

Fourth, The Soviet Union expected to fight the next war on its western plains and adjoining European flatlands. The terrain reinforced the importance of the concept of manoeuvre warfare and speed of advance. This led to the acceptance of a two-pronged operational concept. One, to reach and overwhelm any defensive structure that could break the momentum of the advance and, two, to achieve operational surprise in order to ensure that the defensive structures did not get reinforced. Both these requirements needed a combined arms approach in which, at least in the initial phases, air power was critical to success. This could be considered a tacit acceptance of the somewhat equal status being accorded to air power within the broader military doctrine.

Fifth, is a corollary of the stated need for speed of the advance. Since well-defended built-up areas could delay the advance as well as cause loss of operational surprise, the Army concept was to bypass any pockets of resistance by encirclement and then move forward. The containment of these pockets thereafter fell to the Air Force, since these defensive positions could act as communication hubs for the adversary. The tactical choice that the Army was exercising could only be successful when sustained by the concerted application of air power. From a purely tactical point of view, this was an innovation worth emulating in the pursuance of a combined arms approach to warfare.

Immediately after World War II, the world froze into two competing halves—the Cold War had begun.

## THE COLD WAR

The Soviet military forces were one the earliest to propound the theory of the revolution in military affairs (RMA) in the 1950s. This was the result of the combination of two factors. It was realised by the military forces that the probability of the actual employment of nuclear weapons was minimal and therefore the politico-military importance of nuclear weapons, other than as a strategic deterrent, was diminished to an extent that they were not influential in the creation of operational concepts. This situation prompted a thrust to enhance the conventional combat capabilities of the military forces through the utilisation of emerging technologies. The use of state-of-the-art technologies to create a step-change in combat capabilities became the hallmark of RMA. These technologies revolutionised doctrine, altered concepts of operations, transformed battlefield tactics, and necessitated large-scale changes to the training regime.



Two factors influenced the development of the Soviet air power doctrine, immediately following World War II. First, the strategic centres of gravity of potential adversaries moved beyond the reach of combined air-ground teams for the first time in the Russian experience. Second, the military-technological revolution gave an unprecedented boost to air power capabilities that emphasised their critical role in any future conflict. Even though these factors demanded a revisal of air power doctrine as well as the broader military doctrine, the Soviet high command retained the basic framework of the doctrine developed through experiences in World War II and opted to incorporate changes and new ideas in an incremental manner. This had the advantage of introducing changes in an evolutionary fashion that was easier to accept and adapt to, thereby providing a solid foundation for the doctrine developmental framework.<sup>16</sup>

A number of limited wars took place during the Cold War. A common feature in most of these wars was that one of the protagonists employed Soviet military hardware. Additionally, in some cases the military forces were established and trained by the Soviet Union in accordance with the then prevailing Soviet doctrine and operational ethos. The Soviet Air Force therefore studied all localised conflicts after World War II, starting with the Korean War, conflicts in the Middle East, the Vietnam War, and the Indo-Pakistan wars. The intent was to understand the shortfalls in equipment and training of the Soviet-assisted side as well as to analyse the reasons for the success or failure of the opposing forces. In these studies, special emphasis was placed on an in-depth analysis of the operational employment concepts that were seen to be successful. In a broader manner they also drew lessons regarding the procurement model for technologically advanced equipment and the developments taking place in the military aviation industry.

The post-World War II Soviet Air Force was administered in three large functional commands: Long Range Aviation, Frontal Aviation and Military Transport Aviation. The Air Force also exercised operational control over Long Range Aviation and Military Transport Aviation. However, Frontal Aviation was placed under the operational command of ground force commanders, a unique situation amongst the major air forces of the world. This anomaly diluted the fundamental doctrine and its application in the Frontal Aviation for a number of years. This is evident in the fact that, although the doctrine emphasised an all-round air superiority and control of the air, it was only in the late 1970s that they acquired the dedicated capabilities to support the doctrine. Until then Frontal Aviation remained a force capable of delivering battlefield air defence and close air support. The fluid doctrine that the Air Force espoused, based on control of the air, was not paid enough attention by the land-centric approach of the Frontal

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16 Raymond L Garthoff, 'Introduction', Marshal VD Sokolovsky (ed.), *Military Strategy: Soviet Doctrine and Concepts*, Pall Mall Press, London, 1963, p. xi.

Aviation commanders. Doctrine and capability match was achieved only at this stage. Also at this stage two factors that were needed to carry out conventional large-scale offensive operations, the bulwark of the Soviet military operational concept, was recognised and action initiated to provide the necessary capabilities to the Soviet Air Force. The first was the need to have numerical superiority in order to maintain control of the air for a designated period of time and the second was the need to develop the capabilities necessary to carry out battlefield interdiction.

By the mid-1980s, the Soviet Armed Forces were the largest in the world in every measure—manpower, the number of weapon systems, the varieties of weapons being fielded, mobilisation potential of the nation, and the size of the military-industrial base. The fundamental concept of air operations was not tailored towards winning battles or scoring kills in air combat, but to contribute effectively to a strategy that envisaged an inexorable advance of the combined arms team, irrespective of the cost, to achieve the objectives that would win the war.

#### **DOCTRINE, TRAINING AND WEAPON SYSTEMS**

The Soviet military concepts of doctrine and the art of war are different to what the same terms mean in the Western world. The Soviet Air Force considered doctrine to be the structural framework of ideas and views that formed the basis from which the nation identified ways to fight a war. The art of war was the practical implementation of the doctrinal requirements that was superimposed by Marxist-Leninist ideology, economic considerations, available technology, and the prevailing social structure of the nation. Further strategy flowed from policy and was the manifestation of developed doctrine. The fundamental fact was that both policy and doctrine were extensions of ideology and were driven by it. The fundamental and obvious disadvantage of this framework is that it curbed imagination, inventiveness and initiative at the junior and middle levels of command.

Three major factors influenced the Soviet Air Force doctrine as the Cold War hardened into palpable stand-offs in many parts of the world. They are: the development and deployment of nuclear warheads and their long-range delivery systems; the unprecedented breakthroughs in military technology that directly improved the potency of air power; and the constantly changing international politico-security environment.

Western analysts have repeatedly faulted the Soviet Air Force with two major shortcomings. First was the perceived qualitative inferiority of the Soviet pilot training regime. It has been alleged that the average annual flying time that a Soviet pilot received was around 40 per cent less than their Western counterparts; the training schedule was extremely rigid and discouraged individuality and

initiative; and that even air superiority missions were ground-radar controlled, not giving the mission leader the necessary freedom of action and flexibility. Analysed in comparison to Western air power doctrine and perhaps more importantly in terms of a Western concept of air operations, these allegations may indeed be true. However, when the training schedule, operational ethos, and combat tactics are analysed in relation to the Soviet Air Force doctrine it becomes apparent that the allegations are misrepresentative of the actual conditions. The Air Force doctrine was an integral part, albeit a critical one, of the military doctrine of a combined air-ground operational team. Therefore, the pilots had to accomplish a particular objective in each mission, which did not need a broad range of options to be made available. Rigidity in training stemmed from this belief that it is more effective to have a minimum number of decisions to be made in the heat of battle.

The comparison of flying hours is even more lopsided. The concept of air-ground offensive teams led to the design of aircraft that operate from rough surfaces close to the battlefield of the ground forces. The concept was further developed to have the necessary elements of the Air Force move along with the advancing army and operate from captured or rapidly prepared airfields. This concept had the advantage of reduced transit time for the provision of close air support. A more realistic comparison for that period would be the number of sorties that pilots flew. Statistically, the results would be seen to be the same.<sup>17</sup> This comparison would also have to take into account the differences between the Western air forces and the Red Air Force regarding the level of attrition tolerance and the balance between aircraft numbers and the achievement of mission objectives. These are intangible factors, although numbers can be assessed, and cannot be accurately quantified to arrive at relative performance assessments.

The second perception is that of Soviet aircraft being inferior in both design and performance. It has been alleged, especially during the Cold War era, that Soviet aircraft needed 80 per cent more maintenance than their Western equivalents. In the Soviet Union there was a direct connection between military aircraft design and the Air Force concept of operations. All aircraft that were manufactured were designed to meet the needs of a particular combat mission. However, the designs also exemplified the concepts of standardisation and simplicity, while being directly aligned to doctrinal requirements. As the doctrine evolved, aircraft design kept pace. The MiG-29 Fulcrum family and the Sukhoi Su-27 Flanker family of aircraft are two great examples of developing doctrine driving aircraft design.<sup>18</sup> From a maintenance point of view, the aircraft were easy to maintain, especially when operating from austere airfields with minimal support facilities, and had very simple procedures to follow in the daily servicing schedule. Nobody should

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17 Kainikara, *Red Air: Politics in Russian Air Power*, pp. 223–225.

18 *ibid.*

today be under the impression that the aviation industry that was developed in the Soviet Union during the Cold War was anything but at par with the industry in the rest of the world.

Essentially, both the training regime and aircraft design strongly supported the prevailing doctrine and operational concepts. They also permitted greater intensity and tempo of operations, which was considered a necessity for the success of the air-ground offensive operational concept. From around 1970, the Soviet Air Force adopted the classic concepts of air superiority and command of the air as fundamental requirements for military success and moved out of the control of Army commanders. The well-established tenet of centralised control and decentralised execution became embedded in the Red Air Force.

## THE DECLINE OF RUSSIAN AIR POWER

In March 1985, Mikhail Gorbachev came to power and almost immediately commenced far-reaching reformation of the Soviet Union. This also meant an attempt at refining certain aspects of the military doctrine, prompted by the enhanced conventional capabilities that NATO forces had fielded in the immediate past and also their more focused and offensive concept of operations that combined the Air-Land-Battle and Follow-on-Forces attack. Since the Soviet economy was at a precariously weak position at this stage, the possibility of starting another arms race was a daunting prospect. Under these conditions, and despite their extreme reluctance to do away with their essentially offensive doctrine, the Soviet military was forced to adopt defensive concepts into their overall offensive military strategy.

The re-evaluation of the Soviet security policy was a pragmatic move by Gorbachev who declared in February 1986 that, 'in the military sphere we intend to act in such a way as to give nobody grounds for fears, even imagined ones, about their security'.<sup>19</sup> The driving force behind this pragmatism was the economic reality that the Soviet Union would not be able to withstand another arms race. Its economy was already faltering and on a death spiral. The state of the economy also forced the Government to embark on a modernisation program with *Glasnost*, or 'openness', and strongly advocated *perestroika*, which literally means 'restructuring'. By early 1988, *perestroika* became the centrepiece of the *novoe myshlenie* or 'new political thinking' in the Kremlin.

Given this focus on the economic woes and the debates that followed, a greatly modified military doctrine of 'reasonable sufficiency' was adopted. This new

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19 Mikhail S Gorbachev, *XXVII S'yezd Komunisticheskoy Partii Sovetskogo Soyuz* (27th Congress of the CPSU), officially published stenographic notes, Politzad, Moscow, 1986, p. 89.

doctrinal concept created a feeling of inadequacy in continuing to base the nation's strategic policy on deterrence. The Soviet 'new thinking' sought an alternative through a broader conception of security, reduction in arms, a lesser role for the military in foreign affairs and fundamental changes to military doctrine and strategy.<sup>20</sup> *Perestroika* as well as the modified doctrine was accepted by the military forces. The fundamental belief within the military was that the economy, science and technology, moral and political factors and extant military capabilities combined in an optimum manner to create the war-waging capacity of the nation. Therefore, the military forces were not unduly perturbed when the process of *perestroika* exposed the inadequacies of the development of the science and technology infrastructure and even when this led to the revelation of the deficiencies in the military-industrial complex. However, it gradually dawned on the military that the shortcomings in the science and technology sector directly threatened the superpower status of the military. This meant that *perestroika* now became a critical necessity for the military forces to continue to maintain superpower status, almost a panacea for the visible shortfalls in military capability, and therefore the military wholeheartedly supported the effort. That the attempt at *perestroika* failed, leading to a cataclysmic debacle for the military forces, is a separate issue.

The Soviet intervention in Afghanistan was a watershed moment in Soviet history. The acceptance of defeat and the withdrawal of military forces in 1989 accelerated the gathering momentum of economic collapse within the Soviet Union. The failed intervention in Lithuania in January 1991 was the last nail in the coffin, the proverbial last straw that broke the Soviet Union, which started to unravel on its withdrawal from the Transcaucasus. All through history it is seen that when the armed forces of a nation find that they have become incapable of recruiting people to their ranks, the government is unviable. In early 1991, the Soviet Union crossed this invisible line and disintegrated. Between March and December 1991, all the constituent Republics of the Union of the Soviet Socialist Republics declared independence. Russia however, held on to the mantle of the Soviet Union and did not declare independence. Statistically, 15 independent republics were born. However, Russia held on to 76 per cent of the total territory of the old nation, 51 per cent of the population, and 62 per cent of the industrial output. Militarily, Russia held control of 65 per cent of all manoeuvre forces and combat aircraft, and 75 per cent of strategic nuclear weapons and naval forces.

Fundamentally, the thread of continuity in the Russian military has been the visible chain of interconnection between doctrine, their understanding of the future of war, extant and emerging military capabilities and force structure.

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20 Raymond L Garthoff, *Deterrence and the Revolution in Soviet Military Doctrine*, Brookings Institution, Washington, DC, 1990, pp. 86–88.

During the Soviet regime, the entire structure was superimposed by political ideology, mainly by Lenin's aphorisms on strategy and war. Although it is a mere coincidence that the spectacular success of the 1991 Gulf War corresponded to the break-up of the Soviet Union, the Russian Air Force analysed the air campaign in great detail and drew a number of conclusions that was to change the face of Russian air power in the long term. However, a number of extraneous factors intervened to delay the implementation of remedial measures that were to transform the Russian Air Force to the late-1990s. At this stage the Russian Air Force commenced a long-term shift towards adopting a new concept for the implementation of the Future Air-Land Battle—the Aerospace War.<sup>21</sup>

### **RUSSIAN PERSPECTIVE OF THE AIR CAMPAIGN IN THE 1991 GULF WAR**

The Russian Air Force viewed the air campaign of the 1991 Gulf War as the first demonstration of the 'transition between the old and the new'.<sup>22</sup> The Air Force carried forward six fundamental deductions from an in-depth analysis of the air campaign. First, that the air campaign vindicated the theorists who had been championing the need for a change over to technology-based air operations and the requirement to incorporate emerging technologies into the development of concepts of operations. Second was the acceptance that the Russian doctrine and air power strategy were outdated and therefore needed a re-evaluation of weapons, training and strategy in order to optimise the efficiency and effectiveness of the Air Force.

Third, the air campaign in 1991 was viewed as the prototypical air war, following a contemporary adaptation of Douhet's concept. The Russian Air Force considered the application of air power in the Gulf War to be a continuation of the air war theory used against Japan in World War II. However, the efficacy was considerably higher since technology had provided the necessary impetus and capability to achieve the desired effects in a more certain manner. Fourth, the Gulf War was considered to be a war without borders, flanks, or even defined battlefields. It therefore also blurred the distinction between operational art and strategy. The shift to an emphasis on the air war in any joint operations was now considered essential. Fifth, the importance of space to the warfighting capabilities of the entire military force was demonstrated and forcefully understood. The Russian Air Force believed that this provided an independent dimension to the air war itself. The Gulf War was considered the first demonstration of the crucial role that space

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21 Mary C FitzGerald, 'The New "Aero-Space War" in Soviet Military Thought', Stephen J Blank & Jacob W Kipp (eds), *The Soviet Military and the Future*, Greenwood Press, Westport, CT, 1992, pp. 59–64.

22 Marshal V Kulikov, *Kulikov Defends Soviet Weaponry*, Foreign Broadcast Information Service, FBIS-SOV-91-042, Moscow, 4 March 1991, pp. 41–43.

capabilities would play in future wars. It was surmised that the criticality of space would continually increase as technology-led concepts of operations were further developed. Sixth, was that the Gulf War as a whole demonstrated that defensive doctrines are unlikely to win wars. Therefore, the gradual shift in the military doctrine towards a defensive stance, being considered at different levels from about 1986, was completely negated and stopped once and for all.<sup>23</sup>

### **CHANGES IN AIR POWER DOCTRINE**

The most important development that came about as a result of the study of the 1991 Gulf Air Campaign was that the Russian Air Force broke out of the stifling Army control under which it had laboured throughout the Soviet era. This was almost immediately followed by an independent doctrine development process focused on the concept of an Aerospace War. This also involved dropping the defensive outlook that had been foisted on the Air Force and shedding the politico-ideological baggage of the Soviet era air power developmental process. These changes, instituted rather rapidly also had a direct impact on the force structure development.

Over a period of few years, by the beginning of the 21st century, the Russian Air Force had developed a doctrine that supported the concept of 'conflict prosecution within the laws of warfare'. This was an evolutionary process, reflecting the long tradition and themes that were present throughout the centuries of Russian history. The new doctrine repudiated the Gorbachev era concept of war prevention and advocated the decisive defeat of any aggressor against the state and was a far cry from the deterrent stance adopted during the most difficult years after the break-up of the Soviet Union.

There were other notable changes in the new doctrine—Russia consciously retained the right to use nuclear weapons if necessary, retracting the proclaimed no-first-use policy; the Air Force emphasised the need to seize and retain the offensive as a precondition to victory in conflict; and the doctrine accepted that the requirements to conduct an irregular warfare campaign were sufficiently different to conventional capabilities to warrant a separate developmental regime. The new doctrine definitely led to a more aggressive posture of the Russian Air Force and also confirmed an overarching 'no-official-enemy' policy.<sup>24</sup>

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23 Kainikara, *Red Air: Politics in Russian Air Power*, pp. 283–286.

24 Edward F Bruner, *Russian and Other Former Soviet Armed Forces*, Congressional Research Service Report No. 92014, Foreign Affairs and National Defence Division, Washington DC, 25 November 1995, pp. 5–10.

## BLUEPRINT FOR THE 21ST CENTURY

Russia took a bit longer than anticipated to come to terms with the situation that emerged after the Soviet collapse when the luxury of buffer states vanished overnight, leaving the new nation to deal with the unfamiliarity of directly shared borders with its neighbours. Today it faces new security challenges from within as well as externally. Almost the entire decade following the collapse of the Soviet Union was consumed by the efforts to stabilise the nation, and foreign policy that was the mainstay of the Soviet security equation was pushed to the background. Further, the operations in the Balkans in the 1990s were seen in Russia as a US attempt to achieve global hegemony.

A National Security Concept approved in 2000 still holds true with very minor changes. In this document five major factors are listed as having the most impact and influence on national security perceptions—NATO expansion; Ballistic Missile Defence Proliferation in Europe; separatist movements in Russia, Chechnya and its periphery; growth of global terrorism; and unilateral military action by the US and its allies. Russia has serious concerns today about the diminishing role and capability of existing mechanisms to ensure international security. As a corollary, it wants the world to be truly multipolar with Russia becoming a viable alternative centre of power. The current military doctrine supports this vision.

There are three factors that have historically influenced the Soviet Air Force doctrine and continue to be significant in Russian doctrinal thinking. The doctrine is reactive to NATO intentions in Eastern Europe; it takes into account the historical territorial claims of the Soviet Union, which Russia has automatically assumed to be its responsibility; and the doctrine continues to be oriented towards being able to fight two independent air campaigns simultaneously in geographically separated theatres. The current Air Force doctrine takes into account these three legacy factors and supports a unified national security strategy. It emphasises the need to defend the security of the homeland while exorcising itself of all ideological compulsions of the Soviet era. Another noticeable change is the appreciation of decentralised tactical appreciation of air power that is prominently promoted in the doctrine. Most importantly, it is an aspirational doctrine that supports the national vision of being able to play an influential and responsible international role.

In keeping with the changed perceptions and requirements the Russian military forces were reorganised by Presidential decree on 1 January 2003. This decree created the standard three Services—Army, Navy and Air Force—unlike the previous structure which was disruptive to military effectiveness, especially within the Air Force. By this decree, the Strategic Missile Forces were subsumed into the Air Force as were the Air Defence Forces. With the adoption of these organisational changes the last vestiges of the influence of the Soviet Air Force



was buried for good. The Russian Air Force today has four divisions—Long-Range Aviation, Frontal Aviation, Transport Aviation, and Air Defence Forces. The Russian Air Force now has a central role in the politico-military equation within the nation.

In August 2008, Russia took a positive step towards establishing its claim to once again being a regional power by going to war with Georgia. The fundamental reason for the war was to demonstrate to the former Soviet states that NATO would not confront Russia within its periphery. Although not devoid of few minor snags, the power projection capability of the Russian military forces and the capability of the Russian Air Force to carry out all the necessary missions were clearly demonstrated. Today, Russia still occupies around 20 per cent of Georgian territory. Immediately after the Georgian War, the latest doctrine of the Russian military was released. It is the most aggressive doctrine since the one propagated in 1970 at the height of the Cold War.

The 2008 doctrine is a statement of intent and of a confident military force re-emerging from two decades of vulnerability. This doctrine is a clear statement that Russia wants to, or perhaps intends to redefine the regional and global system, essentially rejecting the US hegemony. It also indicates that Russia will protect its interests no matter where they are and that it has deemed that any activity within the former Soviet sphere of influence that is inimical to Russian interests will be considered a threat to its sovereignty. The doctrine unambiguously states that Russia is the centre of gravity of the region.

### **THE CURRENT STATE**

Since 2008, Russia has announced a number of military modernisation programs. In outlining the State Armament Program 2020 the modernisation plan is stated to cost \$770 billion over the next 10 years. Another initiative has been for the Russian military to acquire foreign military equipment for the first time since World War II. Priority has been given to the command and control structure which has been revamped and brought in alignment with the new doctrine. This suggests that the conventional military forces are being designed to project power to protect Russian interests within its immediate sphere of influence and to defend the homeland. Russia will also rely heavily on its nuclear arsenal as a deterrent against any coalition of superior military capability to encroach on its regional turf.

By 2011, the Russian military and the Air Force had turned a corner. The Air Force now has met the majority of its acquisition targets and funding has been assured for the rest. The State Armament Program 2020 envisages that the aircraft industry will deliver 1120 helicopters, 600 fixed-wing aircraft, and over 100 flight simulators to the Russian Air Force by the end of the program. By current

reckoning, over 70 per cent of this ambitious target seems to be within the reach of the military aviation industry's capability to achieve. This will be a good outcome for the Air Force.

The new developments in aircraft development provide the Air Force greater range and increased lethality, while the emphasis on simulators and improved training methodology creates the infrastructure for the optimised delivery of this greater capability. At the moment the Sukhoi Su-34 'Fullback' strike fighter is the centrepiece of the Russian Air Force modernisation program. The Sukhoi Su-35, generation four plus-plus fighter, is already operational and the Air Force is continuing its procurement in sizeable numbers. The combination of these two aircraft provides the Russian Air Force an all-round capability possessed by very few air forces in the world. Further, the Sukhoi PAK-FA, a 5th generation fighter, has been under development since 2002. The first prototype flew on 29 January 2010 and it is estimated to reach operational service entry by 2015. This development puts the Russian Air Force in the forefront of air power capabilities well into the future.

Understanding the importance of long-range bombers, in April 2013 the Government gave formal approval to proceed with the design development of a new strategic bomber, tentatively named PAK-DA, with the declared intention of replacing the existing fleet within a decade. In addition the Government has created a new company, the Space Defence Industry, to produce weapons for anti-satellite operations. The lessons distilled from the analysis of the 1991 Gulf Air Campaign have not been forgotten by the Air Force as well as the Government.

Revitalisation of the less glamorous aircraft industry, manufacture of transport and special mission aircraft, has also been undertaken. Concerted efforts are underway to invest in military transport aircraft production with contracts already in place for the delivery of 30 Il-76 aircraft starting this year, modernisation of the entire existing Il-76 fleet and the manufacture of 30 air-to-air refuelling aircraft, based on the Il-76. Perhaps the best indicator of Russian intentions is the contract that has been signed with Ukraine to restart the production of the An-124 heavy lift aircraft. It is expected that 80 of these global heavy lift aircraft, the stalwarts of the NATO logistics chain in Afghanistan, will be produced. In anticipation of the start of production, Russia has already slashed 33 per cent of the cost of gas that it supplies to Ukraine. However, the recent developments in Ukraine might slow down the implementation of this understanding.

The current order of battle of the Russian Air Force is given at Appendix 1.

The Russian Ministry of Defence has produced a road map for military developments called Action Plan 2020. This document details the development of a new National Defence Command Centre and the establishment of a new research and development centre for the study and design of uninhabited aerial

vehicles and robotics. President Vladimir Putin has stated that rearmament, which is central to military modernisation, is a priority strategic task of the coming decade.

It is certain that Russia will not be intimidated and will stand its ground from now on. A classic example of this is the recent deployment of the Iskander-M (SS-26 'Stone') short-range ballistic missile (SRBM) to Kaliningrad as a response to the increasing envelope of the US Ballistic Missile Defence (BMD) program. This deployment brings the BMD elements deployed in Poland within the range of Russian missiles. Russia has categorically sent a message that it will not have its strategic deterrence questioned.

### ENDURING THEMES FROM A CENTURY OF SOVIET/RUSSIAN AVIATION

An analysis of a century of military aviation, irrespective of the focus in terms of geography, politics, wars and other factors, will invariably bring out some enduring themes that would have universal applicability. It is so with this analysis also. However, the distilling of these universal themes from the Soviet/Russian experience would have to be viewed with the caveat that military aviation is only 100 years old and therefore the deductions that are arrived at must not be considered universal truths that will stand the test of time. They could be considered strong and indicative trends in the effective application of air power. Further, the deductions have been kept at the strategic level so that they can be adapted to suit any air force or, in a broader manner, any application of air power.

There are six strategic level themes that can be deduced. First, is the unquestionable prerequisite to obtain and thereafter maintain adequate control of the air for the assured success of any other operation, in any of the three operating domains. It is not necessary to belabour this point, other than to mention that this theme is perhaps the one that comes closest to being an eternal universal truth in the theory and practice of warfighting.

Second, the need to have an independent air force is very clearly brought out. Larger military forces might need single Service air arms to increase the efficiency of organic fire support provided by air power, but the fundamental roles of control of the air, air mobility and strike can only be carried out efficiently by a dedicated and independently commanded air force. Almost throughout the Soviet era, the Air Force was forced to play a secondary and support role to the main focus of the Army, irrespective of the doctrine it developed or other campaign objectives. In certain periods, this compulsion even skewed Soviet air power doctrine, especially in its application. While the command structure of the Soviet Air Force did seem independent in a theoretical manner, in its actual employment, command and control of air units were handed over at random to Army commanders with

little or no experience in the application of air power. Not only did this create a complex command chain, it also affected the ability of the Air Force to concentrate force and optimise the utilisation of air assets. Even the Soviet Air Force was not one with unlimited air assets that could be penny-packaged and kept for use on an as required basis in different parts of the theatre. The theme to remember is that not only should the Air Force be an independent force in name, it is equally important to ensure that its command and control during campaigns must also be independent of other operational influences.

Third, the Soviet/Russian Air Force very clearly demonstrated that a function-based organisation is the one that is best suited for air forces. By and large most of the air forces follow this pattern. Such an organisation provides a built-in organisational flexibility that is essential for the force to be able to adapt to challenges and even change during the course of a campaign or war. This ability is critical for the efficient functioning of an air force, especially in long-drawn wars. As a corollary, in modern times when the employment of air power can be sporadic and spread across a vast spectrum of operational situations, flexibility brought about through a function-based organisation would be crucial for success.

The fourth is the need for an air force to have an instituted process by which it continually analyses and studies all applications of air power anywhere in the world, irrespective of how perfunctory such an application may have been and also whether or not it affects the analysing air force. In doing so, it is also necessary to permit the analysing team to function in an open space rather than within predelineated boundaries. This approach is meant to ensure that 'out-of-the-box' and unconventional thinking is given sufficient leeway to flourish. Here it must be remembered that a number of the more noteworthy developments in air power has come from such original thinking. Air power did not have much of history to fall back on when developing its operational concepts and strategic doctrine. The ability to think ahead and to see the way forward when there has been precedence has been a particular strength of air power practitioners and strategists.

Fifth, it can be deduced that the air campaign can only be pursued to its logical end—that of victory—if the nation is able to provide the necessary quantum of air power to the air force. This can only be assured if the nation has industrial self-sufficiency to produce the necessary systems that generate air power. This issue assumes a critical dimension when the campaign is of a long or even moderate duration. Industrial self-sufficiency in this instance is that of the military-industrial complex and is directly influenced by the state of the national economy. The development of self-sufficiency also requires strategic depth in demography, natural resources and an inherent industrial capacity. Self-sufficiency in military systems production, especially in the high-technology regime of aerospace industry, is an extremely difficult position to achieve. In fact, throughout history very few nations have achieved this somewhat exalted status. This theme is

aspirational for most air forces, but must be taken into account in the planning phase of all air campaigns.

Sixth, is the need for an air force to have a well-conceived doctrine. Only an articulated doctrine, forcefully aligned with national policies and security imperatives, but without the imposition of political ideology, can maximise the benefits of an independent air force and develop in the correct direction. All doctrine at the strategic level must have an element of the aspirational; it is that part of capstone doctrine that paves the way for conceptual thinking, critical to the wellbeing of an air force. This deduction is another that could be moved into the realm of universal truths that will serve all air forces in good stead and, perhaps more importantly, will greatly diminish the chances of success in the application of air power if it is not strictly adhered to in the preparation of a force for its ultimate goal—victory in war.

There is one other, minor issue that needs to be highlighted. In today's world, the application of military force is always referred to as the means to achieve national security objectives. From a military perspective this means winning the battle, campaign, operation and war, as a concept, has somehow fallen along the wayside through the inordinate necessity for the democratic nations of the world to be seen as being 'politically correct'. It is gratifying to note that the Soviet Union and modern Russia do not mince their words when it comes to employing their military forces. They state with the utmost clarity that the aim of the military forces is to achieve victory in war, whatever the cost. This uncluttered and direct statement of aim is perhaps worth emulating in the current murky international security environment, when the military forces are being deployed across a spectrum of conflict that has never been so broad. Air power is in the vanguard of all such situations and deployments. The need for clarity of thought has never been more important.

## CONCLUSION

Gradually the Russian Air Force has been consolidated, strengthened, refined and reformed to the point that it is once again a world-class force and a regional heavyweight. However, it must be added that the traumatic decay and decline in capability that it faced in the years immediately following the demise of the Soviet Union still haunts the Russian Air Force. This provides an added impetus to the Air Force to succeed in its modernisation program and to once again be the flag-bearer of Russian military superiority. In this endeavour it has the complete and unfettered support of the Government. As Russia begins to stamp its authority in its region and sphere of influence, air power will continue to be a primary tool in shaping Russian policies and interaction with its neighbours and protecting Russian interests. It was so during the Soviet era, and it continues to be so in the current security environment.

## APPENDIX 1

### RUSSIAN AIR FORCE ORDER OF BATTLE

(UPDATED 19 MARCH 2014)

Aircraft Type		NATO Code	Quantity	Remarks
Fighters & Bombers				
Sukhoi	Su-24	Fencer	260	Another 20 delivery in progress +40 on order +47 Two-seaters; +30 being upgraded +60 on order
	Su-25	Frogfoot	212	
	Su-34	Fullback	156	
	Su-35	Flanker	54	
	Su-27	Flanker	207	
	Su-30	Flanker	62	
Mikoyan	MiG-29	Fulcrum	180	More than 200 in storage; +106 two-seaters (+50 two-seaters in storage)
	MiG-31	Foxhound	247	
Tupolev	Tu-22	Backfire	65	+30 being upgraded
	Tu-95	Bear	71	
	Tu-160	Blackjack	16	
Transport				
Antonov	An-12	Cub	60	+20 on order
	An-22	Cock	2	
	An-24	Coke	25	
	An-26	Curl	80	
	An-32	Cline	50	
	An-72	Coaler	72	
	An-124	Condor	21	
	An-140		28	
Ilyushin	Il-76	Candid	221	
Executive				
Various		Around 50		
Trainers				
Various		260 +		
Air-to-Air Refuellers				
Ilyushin	Il-78	Midas	20	+30 on order
Surveillance				
Mikoyan	MiG-25	Foxbat	20	
Sukhoi	Su-24	Fencer	75	
Tupolev	Tu-22	Backfire	10	

Aircraft Type		NATO Code	Quantity	Remarks
<b>SIGINT</b>				
Antonov	An-26	Curl	20	
<b>AEW&amp;C</b>				
Beriev	A-50	Mainstay	16	
Ilyushin	Il-22/76/87	Coot/Candid/ Mainstay	22	
<b>Attack Helicopters</b>				
Kamov	Ka-50	Hocum	19	At least 115 more on order
Mil	Mi-24	Hind	485	
	Mi-28	Havoc	112	+35 on order
	Mi-35	Hind	59	
<b>Transport/Utility</b>				
Mil	Mi-26	Halo	92	
	Mi-8 and variants	Hip	675	Various models for transport, utility, light attack, C4ISR, EW, NBC detection etc.

**Sources:**

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# IRREGULAR WARFARE: THE REGULAR IN THE IRREGULAR

DR CHRISTINA JM GOULTER

*A violent struggle among state and non-state actors for legitimacy  
and influence over the relevant populations.*

USAF, Air Force Doctrine Document 2-3<sup>1</sup>

Irregular warfare has been the most dominant form of conflict since the end of World War II, and counterinsurgency warfare the most common feature of all. However, Western forces have struggled to draw appropriate lessons from each of their respective experiences, and have treated each conflict as bespoke. Some of the most violent swings in the cycle of 'learning and forgetting' have been in the air power environment. There are a number of possible explanations for this. In spite of the fact that air power has played a central role in most of the irregular warfare experiences since 1945, Western air doctrine during the Cold War had the dual focus of nuclear deterrence and air-land battle, and, as a result, irregular warfare was addressed on a case-by-case basis and there was very little or no read across from one experience to another. There was also a notion that irregular warfare, especially counterinsurgency (COIN), could be conducted merely by scaling down conventional forces, and the term 'Low Intensity Conflict' entered the doctrinal lexicon. This obscured the fact that insurgency, especially the Communist variant, comprised a new kind of war, demanding a radical rethinking of how the military instrument had to be used in counterinsurgency warfare. Another potential explanation for the cycle of learning and forgetting is that the air power environment inclines practitioners to concentrate on the 'here and now' and future capabilities, rather than reflecting on historical experience. This has changed over recent years, thanks to educational reforms within most independent air forces, and, as a result, Western air forces are better off conceptually now than they were two decades ago. However, some of the work on irregular warfare remains flawed, and a number of orthodoxies and accepted wisdoms require scrutiny. For example, over the last two or three years, the discourse on counterinsurgency warfare has drawn a false distinction between

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1 United States Air Force, Air Force Doctrine Document 2-3: *Irregular Warfare*, Department of the Air Force, Washington, DC, 1 August 2007, p. 93. Irregular warfare covers a spectrum of conflict. It includes but is not the same as insurgency or counterinsurgency. Current defence commentators regularly conflate the two.

‘enemy centric’ and ‘population centric’ COIN. The ‘population centric’ model, as the name suggests, emphasises the fact that the people are the prize in COIN, so the focus is on winning ‘hearts and minds’. Meanwhile, the ‘enemy centric’ model, which is characterised as kinetic heavy, is seen as outmoded, unsophisticated and destined to fail. Yet, every COIN experience since World War II has involved a mix of ‘enemy centric’ and ‘population centric’ strategies, and, depending on the nature of the threat, some scenarios have called for a heavy ‘enemy centric’ emphasis. Another misconception in recent defence and academic discourse is that strategic effect and irregular warfare are mutually exclusive, but, again, all historical examples of irregular warfare or counterinsurgency have included strategic effect in one form or other.

Several scholars have already made the point that irregular warfare, and especially counterinsurgency, has been the most common form of conflict since the end of World War II.<sup>2</sup> For example, the United Kingdom has been involved in COIN or some type of irregular warfare every year since 1945, with the exception of 1961. Therefore, the ‘irregular’ has become the regular in terms of frequency. What is surprising, therefore, is the fact that Western militaries have struggled to draw appropriate lessons from each of their respective experiences, and there has been even greater reluctance to learn from others. A good example of this is to be found in the French and American South-East Asian conflicts. At the end of their traumatic time in Indochina, in a rare example of endeavouring to learn from experience, the French military produced a multi-volume ‘lessons learned’ document, which was passed on to the US Military Assistance Advisory Group (MAAG) in the mid-1950s.<sup>3</sup> However, this document was not translated by the Americans until 1967, and it had only started to appear in circulation within the US military at the start of the following year, by which time the US-led

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2 See, for example, Ian FW Beckett & John Pimlott, *Counter-Insurgency: Lessons from History*, Penn & Sword, Barnsley, 2011; Andrew J Birtle, *U.S. Army Counterinsurgency and Contingency Operations Doctrine, 1860–1941*, Center of Military History, Washington, DC, 2009; Andrew J Birtle, *U.S. Army Counterinsurgency and Contingency Operations Doctrine, 1942–1976*, Center of Military History, Washington, DC, 2006; Max Boot, *Invisible Armies: An Epic History of Guerrilla Warfare from Ancient Times to the Present*, New York, NY, 2013; Colonel CE Callwell, *Small Wars: Their Principles and Practice*, His Majesty’s Stationery Office, London, 1906; Richard G Davis (ed.), *The U.S. Army and Irregular Warfare, 1775–2007: Selected Papers from the 2007 Conference of Army Historians*, Center of Military History, Washington, DC, 2008; and Colonel TX Hammes, ‘Why study small wars?’, *Small Wars Journal*, vol. 1, April 2005, pp. 1–5.

3 Commander-in-Chief, French Forces Indochina, *A Translation from the French: Lessons of the War in Indochina*, Volumes 2 & 3, RAND Corporation, Santa Monica, CA, May 1967 (original 1955). The content of the first volume was considered too sensitive for public release, as this dealt with political issues. The author saw one copy of this translation while teaching at the US Naval War College, and as the covering note was numbered in the low 100s, it is assumed that many hundreds of copies were distributed at the time across all the US Services. The translation came far too late to have an impact on US doctrine and planning.

anti-Communist effort in Vietnam had started to unravel thanks to the fallout associated with the Tet Offensive.<sup>4</sup>

The difficulty that Western militaries have had in learning appropriate lessons from COIN experiences has been compensated for only partially by scholarship. The problem with most contemporary studies is that they use a limited range of case studies and extrapolate from these in order to draw general conclusions about the nature of irregular warfare or counterinsurgency. A good example of this is John Nagl's work, *Learning to Eat Soup with a Knife: Counterinsurgency Lessons from Malaya and Vietnam*.<sup>5</sup> While this was considered to be groundbreaking when it first appeared in 2002, the advice he offers to practitioners does not go much beyond the common sense (although there is much to be said for this), and the narrow range of historical case studies does not allow a sufficiently broad and meaningful comparative analysis. By far the best comparative studies thus far are those produced by the RAND Corporation, beginning in 2010 with the report, *Victory Has a Thousand Fathers: Sources of Success in Counterinsurgency*<sup>6</sup> and the report which superseded it, *Paths to Victory: Lessons from Modern Insurgencies*.<sup>7</sup> These works, especially the latter, have been used here<sup>8</sup> as the basis of some observations about how the current discourse on irregular warfare, and especially counterinsurgency, has been diverted down misleading routes. However, the main point is that, until very recently, Western powers getting involved in irregular warfare have treated each experience as bespoke. In other words, they have fallen into a cycle of learning and forgetting. Some of the most violent swings in 'learning and forgetting' have occurred within the air power environment. There are a number of possible explanations for this.

In spite of the fact that air power has played a central and often decisive role in almost all the irregular warfare experiences since 1945, Cold War air doctrine had a twin focus on nuclear deterrence and, especially from the 1980s, air-land battle in support of NATO's forces in Europe. Even largely conventional wars, such as Korea, were seen as anomalies which could distract attention away from Europe. During 1950–51, the US Government and military believed that the war in Korea was part of a Soviet deception plan, designed to commit the US to what

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4 Richard A Hunt, *Pacification: The American Struggle for Vietnam's Hearts and Minds*, Westview Press, Boulder, CO, 1995, pp. 141–143; and James H Willbanks, *The Tet Offensive: A Concise History*, Columbia University Press, New York, NY, 2007, pp. 78–85.

5 John A Nagl, *Learning to Eat Soup with a Knife: Counterinsurgency Lessons from Malaya and Vietnam*, Second Edition, University of Chicago Press, Chicago, IL, 2005.

6 Christopher Paul, Colin P Clarke & Beth Grill, *Victory Has a Thousand Fathers: Sources of Success in Counterinsurgency*, RAND Corporation, Santa Monica, CA, 2010.

7 Christopher Paul, Colin P Clarke, Beth Grill & Molly Dunigan, *Paths to Victory: Lessons from Modern Insurgencies*, RAND Corporation, Santa Monica, CA, 2013.

8 See below.

General Omar Bradley called 'the wrong war in the wrong place.' He also stated: 'We will refuse absolutely to allow local wars to divert us from our central task. They must not be allowed to consume so much of our manpower as to destroy our strength and imperil our victory in world war'.<sup>9</sup> For senior airmen on both sides of the Atlantic, the air-delivered atomic weapon was viewed as the only means of countering Soviet numerical strength and provided the only credible deterrent. Even when air force chiefs acknowledged the existence of irregular warfare, as the RAF's Chief of the Air Staff, Sir Jack Slessor, did in 1954, nuclear weapons were seen as the best means of deterring it, or, at least, escalation of such conflicts:

Our opponents, having deduced that it would be too costly to overwhelm us by direct assault, will take every opportunity to turn or undermine our defences by other means. We must look forward to a difficult era of what may be described as termite warfare – subversion, infiltration, and the exploitation of rebellion ... The function of atomic air power will be the big stick in the background, to keep these affairs from spreading – to prevent the minor tactical episode from developing into the mortal threat.<sup>10</sup>

So, in spite of the fact that irregular warfare seemed to be appearing everywhere, often leading to simultaneous commitments for Western forces, it was still regarded as an aberration or a distraction. This view persisted even when the US and the rest of NATO retreated from the 'Massive Retaliation' doctrine of the early 1950s and started to talk about 'Flexible Response' and 'limited wars'. The idea that the Soviet Union could attempt to further its aims by sponsoring limited wars in South-East Asia, South America and the Middle East was gaining currency, but the default setting within NATO air force circles, especially the USAF, was that nuclear weapons would still be the best means of deterring either a limited or a general war. While he was USAF Chief of Staff during the early 1960s, Curtis LeMay stated that it was 'the general war strength of aircraft and missile forces which place an upper limit on the risks an aggressor is willing to take, and which deter escalation into all-out conflict'.<sup>11</sup> However, it was also during LeMay's tenure that elements within the USAF began to discuss the requirements for dealing with what were described as 'conflicts of lesser magnitude', and this included consideration of a mixed conventional and nuclear force structure.<sup>12</sup> Out of these and similar discussions across US defence, especially within the US Army, came

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9 Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1907–1960 – Volume I*, Air University Press, Maxwell Air Force Base, AL, 1989, p. 419. See also p. 443.

10 Sir John Slessor, 'Has the H-bomb abolished total war?', *Air Force Magazine*, May 1954, pp. 24–26 & 48.

11 Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1907–1960 – Volume II*, Air University Press, Maxwell Air Force Base, AL, 1989, p. 95.

12 *ibid.*

the notion of Low Intensity Conflict in order to describe the type of small wars appearing in South-East Asia and South America. Low Intensity Conflict (LIC) was described in US doctrine as:

... a political-military confrontation between contending states or groups below conventional war and above the routine, peaceful competition between states. It frequently involves protracted struggles of competing principles and ideologies. Low intensity conflict ranges from subversion to the use of armed force ... Low intensity conflicts are often localized, generally in the Third World, but contain regional and global security implications.<sup>13</sup>

LIC did not challenge the existing thinking about air power. It was reasoned that 'conflicts of a lesser magnitude' could be dealt with by merely scaling down conventional forces; if a nation could perform large-scale conventional warfare, then Low Intensity Warfare would not pose a challenge and could be met using a scaled-down version of the conventional force structure already in existence.

The term 'Low Intensity Conflict' continued to be used until the late 1990s, but, especially after the 2003 invasion of Iraq and what followed, counterinsurgency became the focus of most defence-related discourse and doctrine. It was at this point that defence sought answers in historical experience, and works on Vietnam, Malaya and the Soviet period in Afghanistan proliferated. Much slower to appear were the think-pieces and doctrine relating to the application of air power in irregular warfare or counterinsurgency. The US Air Force produced its first comprehensive irregular warfare doctrine since Vietnam in 2007 (updated in 2013), and the Royal Air Force issued its *Counter-Insurgency Primer* in 2009.<sup>14</sup> While the US reluctance to reprise the lessons from the Vietnam era is entirely understandable, the RAF's failure to produce any substantial work on irregular warfare is puzzling, given the frequency with which that air force was employed in counterinsurgency conflicts, in particular. The United Kingdom has been involved in COIN or some type of irregular operations every year since the end of World War II, with the exception of just one year—1961.<sup>15</sup> It has also been

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13 Headquarters Departments of the Army and Air Force, US Army Field Manual (FM) 100-20: *Military Operations in Low Intensity Conflict*, Departments of the Army and Air Force, Washington, DC, 1990, p. 1-1.

14 United States Air Force, Air Force Doctrine Document 2-3: *Irregular Warfare*; United States Air Force, Air Force Doctrine Document 3-2, *Irregular Warfare*, Department of the Air Force, Washington, DC, 15 March 2013; and Royal Air Force, Air Warfare Centre, *Counterinsurgency Primer*, 2009. Note: confusingly, the US *Irregular Warfare* Doctrine Documents do not have the same number; the 2007 version is 2-3, while the 2013 version intended to supersede it is numbered 3-2.

15 Royal Air Force, Air Publication (AP) 3003, *A Brief History of the Royal Air Force*, Her Majesty's Stationery Office, London, 2004.

on an expeditionary footing for most of its existence. So, the RAF has had more continuity than change, yet has had great difficulty codifying experience in either doctrine or other conceptual work.

Another possible reason why the RAF, like many independent air forces, has struggled to learn from historical experience is because the nature of the air power environment inclines practitioners to consideration of the 'here and now' and future capabilities, rather than engaging in the lessons-based conceptual debate. As a former RAF Chief, Sir Jock Stirrup, observed: '... technological change is a defining feature' of the RAF (and any modern air force), and drawing lessons from even recent campaigns has never been a particular strength of the independent air force.<sup>16</sup> This has changed in recent years, thanks to the educational reforms in several air forces. The USAF led the way a decade ago, thanks to the drive and initiative of its Chief of Staff, General Mike 'Buzz' Moseley, and the RAF followed suit, under the auspices of Chief of the Air Staff, Sir Glenn Torpy. Both these air forces instituted radical changes in air power education, from junior to senior ranks, including the introduction of PhD and other Higher Degree Fellowship programs. Meanwhile, the Royal Australian Air Force invested heavily in its Air Power Development Centre, producing cutting-edge work on subjects as diverse as tailored deterrence and urban close air support, and its thinking has been incorporated into other nation's doctrine (not always with due acknowledgement!).<sup>17</sup>

Therefore, Western air forces are better off conceptually now, compared with the 1990s. However, there remain sizeable gaps in defence discourse, many having a bearing on how air power is employed, and some of the debates since 2001 have been dangerously misleading. One of the greatest mistakes has been to draw hard and fast delineations between various strategic contexts: for example, Cold War and post-Cold War; Afghanistan and post-Afghanistan; regular warfare

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16 *ibid.*, p. ii.

17 For reasons of diplomacy, the 'offending' nations are not named; suffice it to say that they are central to NATO's air power capacity! See, for example, RAAF Air Power Development Centre *Pathfinder* Bulletins, 'Air Power and Coercive Diplomacy' (Issue 177, May 2012), 'Facets of Air Power: Employment in Urban Conflicts' (Issue 163, September 2011); 'Long-Range Strike Capability' (Issue 215, February 2014); 'Facets of Air Power: An Element of National Power' (Issue 160, July 2011); and 'Air Power and Collateral Damage: The Strategic Effect' (Issue 126, January 2010).

and irregular warfare, etc.<sup>18</sup> Military practitioners have always sought order and definition, because this is what their business demands. But, what we are seeing increasingly are absolutist positions. These may appeal to the Treasury, but such distinctions are useful only in theoretical modelling. During the last three or four years, especially, black-and-white delineations have been evident in the discourse on counterinsurgency. Yet, of all the strategic contexts the West has wrestled with since the end of World War II, this is the one requiring the greatest nuances, subtleties and flexibility. Very sharp distinctions have been drawn between 'Population Centric COIN' and 'Enemy Centric COIN'. The population centric model, as its name suggests, emphasises the fact that the people are the prize in COIN, so the focus is on winning 'hearts and minds'. Conversely, enemy centric COIN, which focuses on killing or capturing insurgents and degrading their infrastructure, is kinetic heavy, and is portrayed as outmoded, unsophisticated and destined to fail.<sup>19</sup>

The false distinction which has been drawn between 'population centric' and 'enemy centric' counterinsurgency came about as a result of the perceived or real failures in Iraq and the early stages of Afghanistan. The 'population centric' model was given pre-eminence in the US Army's capstone counterinsurgency manual, FM 3-24, *Counterinsurgency*, which was revised in 2006.<sup>20</sup> For many, this emphasis was vindicated by the success of the US engagement strategy in Iraq (the principal feature of the 'surge' in 2007–08), an approach which was actually conceived of by British General Graeme Lamb and applied by the British Army in Afghanistan increasingly from about 2009 onwards. Since that time, many military practitioners and scholars in the field of defence studies have downplayed, in some cases poured scorn on, the use of kinetic force in counterinsurgency. At the forefront of the 'population centric' advocates is John Nagl, and his work has been required reading within US Army circles for most of the last decade at the behest

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18 In the most glaring example of false logic, any capabilities which were dominant during the Cold War were radically downsized during the 1990s. This was seen on both sides of the Atlantic: the US Navy had its ASW squadrons cut in half, from 24 squadrons down to 13 within the space of two years, and, in the UK, maritime patrol assets came under similar pressures (even though Nimrods proved useful in an overland surveillance role during Gulf War I). See CJM Goulter, 'The ebb and flow of maritime aviation', Peter W Gray (ed.), *British Air Power*, The Stationery Office, London, 2003. The debates over Afghanistan and what follows have been similar, with assets such as Sentinel being viewed purely as Afghanistan UORs (Urgent Operational Requirements), but most of the assets axed or in danger of being axed after the UK Strategic Defence and Security Review of 2010 have proven to be of universal utility and, in the case of Sentinel in Libya, central to other campaigns. Also, ideas that the withdrawal from Afghanistan at the end of 2014 will amount to a clean break are naïve. The Afghans are very dependent upon NATO for key capabilities, such as air mobility, especially medical evacuation (medevac), and they are certain to request ongoing assistance in these and other areas, including training.

19 Paul, Clarke, Grill & Dunigan, *Paths to Victory: Lessons from Modern Insurgencies*, p. 5.

20 Headquarters Department of the Army, US Army Field Manual (FM) 3-24, *Counterinsurgency*, Department of the Army, Washington, DC, 2006.

of influential Generals such as Petraeus.<sup>21</sup> The difficulty which has arisen is that such works have gained traction within senior echelons, so the 'population centric' model has become strict orthodoxy. A former UK Army Chief (and then Chief of the Defence Staff), General Sir David Richards, announced in 2008 that 'in wars among the people, if you are using a lot of firepower, you are almost certainly losing.'<sup>22</sup>

With the current discourse running perilously close to arguing that *any* type of kinetic use in counterinsurgency is not merely counterproductive but unwarranted, it is worth making a number of observations about the role of kinetics in counterinsurgency. First of all, there have been a considerable number of 'enemy centric' COIN campaigns which have succeeded, including Greece (both during the 1944–45 period and the 'third round' in 1946–49, which is regarded as the main civil war period, with the success in the former laying the foundations for ultimate victory in 1949); Oman, 1957–59; Angola, 1975–2002; Mozambique, 1976–1995; and Turkey (against the PKK), 1984–1999. A recent RAND study included Northern Ireland in a list of 'enemy centric' COIN victories.<sup>23</sup> Whether it is appropriate to call this case a counterinsurgency triumph is debatable, as this was, arguably, more of a counterterrorism campaign in support of the civil authorities. However, it does share many COIN features. The main point is that some counterinsurgency campaigns have demanded a high proportion of kinetics, simply because this was the nature of the challenge. However, even in 'enemy centric' scenarios, such as those above, there were still 'hearts and minds' elements. In Greece, for example, during the 1944–45 period, there was the classic 'Three Block War' going on daily.<sup>24</sup> During December 1944, air power, tanks, artillery, even naval gunfire support, were used to deal with insurgent strongholds in the centre of Athens, while a few blocks away, British

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21 Nagl, *Learning to Eat Soup with a Knife: Counterinsurgency Lessons from Malaya and Vietnam*, See also 'Constructing the legacy of Field Manual 3-24', *Joint Force Quarterly*, no. 58, 3rd Quarter, 2010.

22 General Sir David Richards, International Institute for Strategic Studies (IISS) speech, Geneva, September 2008.

23 Paul, Clarke, Grill & Dunigan, *Paths to Victory: Lessons from Modern Insurgencies*, 'Table 3.2: Countries, Date Spans, and COIN Paths of the 59 Core Case Studies in the Decisive Phase of Each Case', pp.74–75.

24 The term 'Three Block War' was first used by USMC General Krulak to describe the difficulties posed in counterinsurgency, especially within the urban environment, although the concept applies more generally to the ambiguities faced in COIN when kinetics and 'hearts and minds' have to be applied in close proximity. See General Charles C Krulak, 'The strategic corporal: leadership in the Three Block War', *Marines Magazine*, January 1999.



paratroopers were feeding the local population.<sup>25</sup> In short, coercion and influence were achieved through both soft and hard power.

Another observation can be made about the use of kinetics in counterinsurgency. Almost all COIN campaigns begin with a kinetic-heavy approach. This is for a number of reasons. Typically, a counterinsurgency force lacks precise intelligence at the beginning of a campaign, so targeting tends to be dominated by kinetic effect, and, regrettably, targeting is not always precise or proportionate at the very beginning of a campaign. A good example of this was seen at the beginning of the Malayan campaign, before the British military and civil authorities developed a comprehensive intelligence apparatus against the largely Chinese Communist insurgency. Air strikes against known insurgent strongholds in the jungle utilised intelligence that was often days, if not weeks, old, and such attacks achieved very little, other than alienating local populations.<sup>26</sup> Bombing through jungle in the hope of hitting insurgent bases was often wishful thinking, and came close to confusing activity with achievement. There are other reasons why a COIN campaign may begin with a kinetic-heavy approach, chief of which is the fact that inroads must be made into an insurgency by targeting hardliners who have to be either killed or captured. If this can be done at an early stage of an insurgency, before it gains ground, then a counterinsurgency force may triumph within a few years. However, there are very few examples where COIN forces have achieved this and have won within a two or three-year period.<sup>27</sup> Across 71 recognised counterinsurgency cases, only three fall within this type of time span: Oman (1957–59), Jordan (1970–71) and Greece (1946–49), although in the latter case it can be argued that the groundwork for eventual victory had been laid during the British intervention during the ‘second round’ of the Civil War between 1944 and 1945.

In the course of a typical counterinsurgency campaign, the use of kinetic force does tend to diminish as progress is made. But there are important qualifications to this point. Throughout the span of a COIN campaign, there will always be spikes of insurgent violence, which need to be addressed with some level of kinetic force. The average time taken for a COIN victory is 8–9 years, and during

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25 Air Historical Branch (RAF), RAF Narrative, *RAF in the Maritime War*, Vol. VII, Part II, Mediterranean, 1944–45, pp. 831–832; Army Historical Branch, War Office, British Historical Section, Central Mediterranean, ‘Operations of British Troops in the Insurrection in Greece, December 1944–January 1945’. See also: Christina JM Goulter, ‘The RAF in counter-insurgency warfare: British intervention in Greece, 1944–45’, Joel Hayward (ed.), *Air Power, Insurgency and the ‘War on Terror’*, Royal Air Force Centre for Air Power Studies, Cranwell, 2009, pp. 95–111.

26 Malcolm R Postgate, *Operation Firedog: Air Support in the Malayan Emergency 1948–1960*, Her Majesty’s Stationery Office, London, 1992; and AP 3003, *A Brief History of the Royal Air Force*, pp. 208–209.

27 Paul, Clarke, Grill & Dunigan, *Paths to Victory: Lessons from Modern Insurgencies*, Figure S.3, p. xxxi, & Table 2.1, pp. 18–20.

campaigns lasting, in effect, a decade, there will be periods when insurgent violence will ebb and flow. Ironically, heightened insurgent violence is often a sign that a counterinsurgency force is winning, because insurgents will be desperate to turn the tide in their favour and will launch 'spectaculars' in order to make the point that they are still a force to be reckoned with. This is a common phenomenon just prior to peace negotiations because insurgents believe that this is the best method to gain concessions. Even when insurgencies feel that they are in the ascendant, the employment of 'spectaculars' is common in the lead-up to negotiated settlements. This was seen most graphically during the French war in Indochina, where the Viet Minh launched their attack on Dien Bien Phu with the aim of exerting maximum leverage over the French in peace negotiations. Although the Viet Minh was ultimately victorious, it had come very close to defeat during the 1951–52 period, when French pacification efforts and offensives in Tonkin had decimated much of the Communist infrastructure and fighting capacity. Like the Communist effort later in Vietnam, the Viet Minh demonstrated impatience, and often attempted offensive action before it was fully prepared. The French reaction to a succession of Viet Minh thrusts into the Tonkin delta succeeded in wiping out most of the Communist provincial regional forces by 1953, and the 'ink blot' clear, hold and build strategy applied by the French GAMO (*Groupement Administrative Mobile Operationnel*)<sup>28</sup> ensured that the Viet Minh did not return to many of the northern provinces. However, after the French Government signalled its intent to withdraw forces from Indochina, the Viet Minh realised that it had a chance to win, but needed to demonstrate its power by a *coup de grâce*, and Dien Bien Phu was the upshot. As other historical examples show, violence often increases towards the end of a successful counterinsurgency effort as the insurgents have to apply increasingly coercive measures to augment their manpower. One of the best examples here is to be found in the final round of the Greek Civil War. By 1947, over 70 per cent of the Communist fighting manpower had been pressed into service.<sup>29</sup> New 'recruits' were obtained during raids on villages and towns across Greece, and many operations were launched with the specific aim of capturing suitable personnel. As many men of draft age were already in the Greek National Army, the Communists turned their attention to women and children, and at least 30 per cent of their infantry were women.

Another observation which can be made about the role of kinetics in counterinsurgency warfare is that the most capable element of an insurgency

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28 Alexander Zervoudakis, "Nihil mirare, nihil contemptare, omnia intelligere": Franco-Vietnamese intelligence in Indochina, 1950–1954, Martin S Alexander (ed.) *Knowing Your Friends: Intelligence Inside Alliances and Coalitions from 1914 to the Cold War*, Frank Cass, London, 1998, pp. 195–229.

29 Christina JM Goulter, 'The Greek Civil War: a National Army's counter-insurgency triumph', *The Journal of Military History*, vol. 78, no. 3, July 2014, p. 1032.

will be almost indistinguishable from a conventional fighting force. This was seen very graphically during the Vietnam War. One of the greatest misconceptions about that conflict was that the Viet Cong insurgency was indigenous to the South. Not only was the Viet Cong controlled by the North Vietnamese Army (NVA), it was part of it, and what were known as 'Main Force' battalions were trained and equipped nearly to the same standard as the regular NVA units. One infamous example suffices to make the point. On 3 January 1963, a battalion of the ARVN (Army of the Republic of Vietnam) 7th Division was tasked with seizing a Communist radio transmitter in the village of Ap Bac in the Mekong Delta. The advice given by the recently instituted US Military Assistance Command Vietnam (MACV) was that the site was defended by elements of the Viet Cong 514th Regional Battalion. In reality, the defenders had been augmented by the 261st Main Force Battalion, and the South Vietnamese battalion encountered heavy fire, resulting in 80 deaths and over 100 seriously wounded. ARVN airborne reinforcements dropped too far to the west to have an impact on the operation, and the attack stalled and went rapidly into reverse. This defeat was not only embarrassing for the ARVN, but it led the Americans to the fatal decision to sideline the ARVN into a provincial defence role while the US took on the 'real warfighting'. When the US withdrew from Vietnam in 1973, the ARVN was not as well prepared for the final Communist onslaught as it should have been. Although the ARVN fought with great bravery during the final battles for the South during the spring of 1975, the prime example being the Battle of Xuan Loc, when the ARVN 18th Division held off a corps-sized assault by the NVA for two weeks, it lacked the resilience to withstand a multi-pronged attack throughout the whole of South Vietnam.<sup>30</sup>

Some of the historical examples cited above also reinforce another point: the fact that insurgencies tend to morph in response to counterinsurgency methods, and there are many examples of insurgencies transforming themselves, or at least parts of their fighting machinery, into regular forces. A substantial proportion of the Communist-based insurgencies which grew out of World War II fall into this category. For example, during the final round of the Greek Civil War, the Greek Communist Party (KKE) made the decision to transform its guerrilla units into a regular army, known as the DSE. At the height of the Greek Civil War, the DSE had 26 210 personnel in several Divisions, with an additional 20 000 reserves in neighbouring countries.<sup>31</sup> Although it was hamstrung initially by a lack of trained military personnel, and was dominated by an almost exclusively civilian leadership

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30 George J Veith, & Merle L Pribbenow II, "Fighting is an Art": the Army of the Republic of Vietnam's defense of Xuan Loc, 9–21 April 1975, *The Journal of Military History*, vol. 68, no. 1, January 2004, pp. 163–213; and Andrew F Krepinevich Jr, *The Army and Vietnam*, Johns Hopkins University Press, Baltimore, MD, 1986, pp. 78–81.

31 Goulter, 'The Greek Civil War: a National Army's counter-insurgency triumph', p. 1031.

to begin with, the DSE developed the organisational, doctrinal and equipment features of a regular army. It possessed a surprisingly good intelligence apparatus, including a signals intelligence (SIGINT) capability, and, thanks to support from the Soviet Union and Eastern Bloc countries, the DSE had better armament than the Greek National Army it was fighting until at least 1948. The only equipment of note that it lacked was aircraft, and this proved to be its decisive disadvantage during the final year of the conflict. Similarly, the Indochinese Communists transformed the Viet Minh from a guerrilla movement into a wide-spectrum force, with regular divisions as well as regional popular units. By 1950, the Viet Minh had five principal Infantry Divisions (304th, 308th, 312th, 316th and 320th), and all of these possessed artillery battalions. The Viet Minh also created a Heavy Division, with field artillery and combat engineers. All of the divisions operated according to Soviet doctrine, because most of the senior hierarchy had been trained in either the French or Soviet military educational systems, and, therefore, Clausewitz was the chief theoretical influence. Like the DSE, the Viet Minh lacked an air force, but it prevailed in spite of this because the French lacked the political will to continue the fight after the Dien Bien Phu debacle.<sup>32</sup>

For successful counterinsurgency, however, the possession of an air power capability has proved to be critical. In every case of counterinsurgency victory, COIN forces interrupted or completely severed the insurgents' sources of material support, and air power played *the* key role in that interdiction. For example, during the third round of the Greek Civil War, the provision of British and American aircraft allowed the Government's forces to interrupt Communist cross-border logistics, and, most significantly, enhance the Greek National Army's operational tempo through constant air resupply. By the closing stages of the conflict, most of the Greek National Army's logistics were airdropped, thus obviating the need to move supplies via an easily ambushed and rudimentary road system in the north of the country.<sup>33</sup> Conversely, whenever COIN forces were unable to sever or, at least, interrupt insurgent logistics, campaigns were either protracted or failures. One of the most important factors explaining American failure in Vietnam was their inability to deal decisively with the infamous Ho Chi Minh trail, the Communists' arterial logistics system which ran along the Laotian, Cambodian border into South Vietnam. The difficulties arose mainly because the US was bound by the terms of the 1962 Geneva Conference on Laos not to violate its neutrality, so air power and other types of force were severely constrained. Most of the Trail in Laos between the 17th and 15th parallels remained unscathed. There were other factors. The Trail had built-in redundancy, so that if any segment

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32 Service Historique de la Défense (SHD) 10H635, Note d'Information sur les Forces Armées Rebelles No 1: Organisation des Forces Armées Rebelles, dd. 25 September 1951; and Yves Gras, *Histoire de la Guerre d'Indochine*, Denoël, Paris, 1992, pp. 15–40 & 305–562.

33 Goulter, 'The Greek Civil War: a National Army's counter-insurgency triumph', pp.1049–10

was put out of commission, diversions could be deployed. It was also because the Trail comprised so many strands. By 1975, it consisted of six main north-south routes, and over 20 lateral east-west arteries. The routes passed through heavy jungle and mountainous terrain, so even finding them was an issue. This is why the US expended so much money on defoliants, electronic sensors, surveillance, bombing and cross-border Special Operations during the conflict in an effort to stop North Vietnamese logistics. Some of these approaches impeded the flow of logistics, but never sufficiently to have a major impact upon Communist fighting capacity. At its peak, in 1969, the Ho Chi Minh Trail fed 20 000 tons of supplies and equipment a month into South Vietnam.<sup>34</sup>

The experience that the Americans had in Vietnam resonates with the second Gulf War, especially in the way the Shia-based insurgency in the South of Iraq relied upon cross-border support from Iran.<sup>35</sup> In spite of intelligence indications that the Iranians were using multiple proxies in Iraq, and were training irregulars on the Hezbollah model, political constraints on the use of military force meant that the coalition were never able to stem cross-border influence or material support to the militias. For British politicians, in particular, the fact that UK and coalition presence in Iraq ran counter to Iran's ambitions was an inconvenient truth. So, although the coalition had the physical means to deal with the state-sponsor in this case, it would have represented an escalation of the conflict well beyond the stated remit. But, there are those who believe that the Iranian-sponsored militias should have been dealt with more robustly *inside* Iraq. However, the main issue at hand is that the cross-border support to an insurgency could not be stopped, in this case for political reasons, and so the insurgency continued almost unmolested.

Although the RAND study, *Paths to Victory*, stopped short of making this observation, the examples used to analyse the significance of external support to host nation COIN forces showed that a remarkably high percentage of COIN or irregular warfare successes involved no Western ground troops (apart from Special Forces or advisory teams).<sup>36</sup> Air power was the main instrument or played

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34 Harry G Summers, Jr, *Historical Atlas of the Vietnam War*, Houghton Mifflin Co., Boston, MA, p. 70. See also: Paul, Clarke, Grill & Dunigan, *Paths to Victory: Lessons from Modern Insurgencies*, pp. 150–152, 158 & Chapter 2.

35 John R Ballard, *From Storm to Freedom: America's Long War with Iraq*, Naval Institute Press, Annapolis, MD, 2010, p. 223; and Mark Urban, *Task Force Black: The Explosive True Story of the SAS and the Secret War in Iraq*, Little, Brown, London, 2010, pp. 206–210 & 225–226.

36 Cases included the Philippines (Huk Rebellion), 1946–56; Guatemala, 1960–1996; Oman (Dhofar Rebellion), 1965–1975; Western Sahara, 1975–1991; Mozambique (RENAMO versus FRELIMO), 1976–1992; and El Salvador, 1979–1992. See Paul, Clarke, Grill & Dunigan, *Paths to Victory: Lessons from Modern Insurgencies*, *Paths to Victory*, 'Table 3.3: Countries, Date Spans, and Maximum Levels of Involvement for External Actor-Supported Counterinsurgencies', pp. 77–78.

a large part in victory, and both kinetic and non-kinetic effects were present. In the preponderance of cases, the host nation had counterinsurgency forces on the ground, but the provision of Western air power (either overtly or covertly via the CIA, and equivalent agencies in other countries) was decisive. The example, *par excellence*, of air power as the principal instrument of victory in an irregular warfare setting is the Libyan campaign of 2011.<sup>37</sup> Both Britain and France had Special Forces on the ground but it was air power that provided the anti-regime forces with the decisive advantage and force multiplying effects that they needed. Before the full weight of NATO air power came to bear from the end of March 2011, the rebels found it difficult to maintain control over several significant towns. Ajdabiya, just south of Benghazi, is a good example of this; it changed hands several times during March. However, when allied air power was focused on stopping the advance of regime forces, in concert with strikes on regime command and control (C2), lines of communication and logistics, Gaddafi's ability to attack his own people diminished rapidly.

NATO air planners developed a campaign that separated Gaddafi from his power base, and the main conclusion was that his centre of gravity was regime cohesion. This is why an increasing number of attacks were performed against strategic targets, such as Gaddafi's compound in Tripoli, after which there were massed defections from the regime. One of the most important developments, though, was a process of dynamic targeting, whereby Air Contingent Commanders and aircrews were given far more responsibility for targeting decisions. In such a fluid battlespace, where the priority was to protect Libyan civilians from regime forces, pre-planned sorties quickly proved to be insufficient. There needed to be some mechanism whereby aircraft patrolling an area could respond quickly against regime forces engaged in attacking civilians. As most of the fast jet aircrews had combat experience only in Afghanistan, they found the urban operating environment challenging to begin with. But, as the RAF crews found, the precision weapons at their disposal (especially Dual Mode Seeker Brimstone) allowed them to be very precise (99 per cent of Brimstones hit their intended targets). This level of precision not only physically aided the rebel forces but it had a major psychological impact on regime forces, causing battleshock, especially among mercenary fighters, who fled into Niger and the Sudan in large numbers after the heavy air strikes on Misrata in April. The dislocation of the regime also occurred because of the simultaneous attacks across the breadth and depth of Libya. On any one day, RAF and other NATO air power was striking weapons storage facilities deep in the desert (at Wadden), Gaddafi's Tripoli compound, as well as fielded forces. The impression of NATO air power omnipotence and the physical damage it did were key to Gaddafi losing face and power. Post-campaign

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37 House of Commons, Defence Committee, 'Operations in Libya', Section 3, NATO, 2011, pp. 1–2 & 7–9; 'UK COntribution to the Operation', p. 7.

analysis confirmed that while most regime personnel had little fear of, or respect for, the rebel forces, they genuinely feared air attack, and concluded that this was their decisive disadvantage.

In observing scenarios where the West has had limited ground presence but provided decisive air power, one of the temptations is to conclude that air power is a quick and easy solution. This is particularly so when there has been a campaign success, such as Libya.<sup>38</sup> Having seen what air power achieved in support of the Libyan rebels, the US, UK and French governments developed plans to intervene in Syria to stop President Assad's security forces brutalising populations in rebel districts. However, intervention did not receive official parliamentary sanction in the UK, and the other nations backed away from applying a coercive air campaign. The main point here is that the politicians were quick to reach for air power as a coercive instrument, knowing that a 'boots on the ground' intervention would have been unpopular, both domestically and internationally. However, the fact is that even an air power option would not have come cheap. Syria posed a far more dangerous opponent, compared with Libya, with a far more potent integrated air defence system (IADS).<sup>39</sup> The Syrians upgraded their IADS in 2006–7, with a focus on surface-to-air missile (SAMs) and early warning capability, with Chinese-sourced radar never encountered before by the West. To have intervened in Syria would also have attracted the unwelcome attention of Iran, which has traditionally used Syria as a conduit to support various terrorist movements, such as Hezbollah. Furthermore, Syria has already succumbed to sectarian violence, and removal of the Assad Government without consideration of what to replace it with would have ushered in even greater instability.<sup>40</sup>

The aftermath of the Libyan campaign (and the rapid gains made by the Islamic State of Iraq and the Levant (ISIL) in Iraq during June 2014) reinforce the point that only a comprehensive strategy involving military, social and economic programs works in the long term, and that, ideally, both a host nation and supporting external actors need the resolve to stay in the fight until the job is

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38 The distinction is being drawn here between success in terms of the immediate campaign objectives and the longer term unintended or unanticipated consequences of intervention. In the case of Libya, air power and Special Forces intervention dealt with the threat to the Libyan population posed by the Gaddafi regime, but it unleashed old tribal enmities and created the conditions for Islamist extremist elements to flourish.

39 'Access denial: Syria's air defence network', *Jane's Defence Weekly*, vol. 51, no. 15, 9 April 2014, pp. 22–28.

40 Syria is governed by the Alawites, an offshoot of Shia Islam, but representing a minority. A Shia-Sunni conflict in Syria has been exacerbated by the proliferation of various Salafist networks fighting Assad's regime. The term Salafist comes from the 'salaf al-saleh' or 'righteous ancestors', a traditional arm of Islam. Some Salafist groups are conservative and pacifistic, others adopt a violent revolutionary, jihadist position. The latter are Al-Qaeda affiliates, and seek to create a hardline Islamic state in Syria, potentially merging with ISIL. See Waleed Al-Rawi & Sterling Jensen, 'Syria's Salafi networks: more local than you think', *PRISM*, vol. 4, 2014, pp. 43–57.

done. Even if air power proves to be decisive in a campaign, it should not be seen as the total solution. Indeed, air power has some inherent dangers and weaknesses which need to be factored in, especially when it is applied to COIN or irregular warfare scenarios. The most obvious inherent weakness is that air power cannot hold ground. Even with the very latest unmanned surveillance technology and air-to-air refuelled aircraft, which allows persistent coverage of the battlespace, the nature of irregular warfare, and especially COIN, demands a certain footprint on the ground. Air power may contribute (often in a decisive way) to the classic 'clear, hold and build' COIN strategy, but physical presence on the ground is required for the latter two functions.

However, one of the greatest issues is how air power is perceived. Because of its enormous destructive potential, air power is often seen as a disproportionate use of force, and this is magnified in the urban environment where media coverage is usually instantaneous. If terrorist or rebel groups have the initiative in terms of the strategic narrative, they find it easy to portray air power in a bad light. The Israelis found this to their cost in Lebanon during the 2006 conflict. The Israeli Defence Force (IDF) was commanded at the time by an Air Force General, Dan Halutz, whose approach to the threat posed by Hezbollah from southern Lebanon was to use air power and Special Forces. The reluctance to use a large land force was understandable, but the international sympathy that Israel received initially because of the kidnapping of the two Israeli soldiers and Hezbollah rocketing of northern Israel dissipated rapidly the minute the media started to report on Israeli Air Force (IAF) attacks on hospitals, schools, mosques and critical infrastructure.<sup>41</sup> Most of these reports were wildly exaggerated, and often fraudulent. The IDF was, in fact, very mindful of collateral damage issues, and, as one commentator observed, 'political and humanitarian "effects" of attacks were considered and were accepted to be just as important, if not more important, than the purely military calculations.'<sup>42</sup> Israel abided by its stated objectives. These were to attack Hezbollah headquarters, bases, training camps, Lebanese military installations, bridges connecting north and south Lebanon, and the main road connecting Beirut and Damascus.<sup>43</sup> The difficulty for the IDF was that many of the Hezbollah fighters were located in the densely populated portions of south Beirut, which was a conscious decision on the part of Hezbollah in order to reduce the danger to themselves. Nevertheless, the IDF elected to use both naval gunfire and air power to deal with known Hezbollah locations, and the cumulative and concentrated

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41 William M Arkin, *Divining Victory: Airpower in the 2006 Israel-Hezbollah War*, Air University Press, Maxwell Air Force Base, AL, 2007, Chapter 5; and Dr Sanu Kainikara, & Dr Russell Parkin, *Pathways to Victory: Observations from the 2006 Israel-Hezbollah Conflict*, Air Power Development Centre, Canberra, 2007, pp. 73–78

42 Arkin, *Divining Victory: Airpower in the 2006 Israel-Hezbollah War*, p. 106. See also p. 76.

43 *ibid.*, p. 105.



destructive effect delivered within a short space of time (34 days) magnified the impression that the IDF was being arbitrary and was engaging in a punishment strategy. The media modified international opinion within the space of a few weeks, and Israel was criticised widely for its 'indiscriminate' bombing and 'disproportionate' use of force. In reality, Israel had warned the Beirut population that it was intending to attack Hezbollah sectors by means of leaflets, broadcasts and other media. Ironically, the exodus which occurred in some parts of the city led to many of the buildings formally occupied by Hezbollah fighters being abandoned, and when these were hit by the IDF, there were claims that the Israelis were destroying portions of the city just for the sake of it! The Lebanese Government claimed that 1190 civilians were killed and over 4000 seriously injured, although it was not stated how many of these were Hezbollah.<sup>44</sup>

The Secretary-General of Hezbollah, Hasan Nasrallah, admitted after the conflict that had he had not anticipated Israel's fierce reaction to the kidnapping of the two Israeli soldiers, and that he would be unlikely to pursue similar options in the future. In this respect, the IDF achieved one of its long-term aims: deterring Hezbollah, and one of the prime reasons it succeeded in having a deterrent effect is that the IAF was able to identify Hezbollah positions, including rocket launchers, quickly and deliver precise weapons effect.<sup>45</sup> Similar observations were made about NATO air power during Operation *Unified Protector*. However, Hezbollah was not eliminated and the 2006 conflict entrenched anti-Israeli sentiment elsewhere in the Arab world. The outcome can best be described as a 'curate's egg'.

Contrary to how it was portrayed in the international media, the Israelis operated with a targeting process which was accountable. Indeed, this underscores the fact that the targeting process with which air power operates makes it the most discriminating type of force available, and usually the most precise and proportionate. But also as the Israeli experience in 2006 demonstrated, its ultimate success is dependent upon excellent intelligence. If campaign authority rests upon keeping collateral damage to a bare minimum, then accurate and timely intelligence is vital. This was understood as far back as the very first counterinsurgency experiences for the West. For example, during Britain's intervention in the 'second round' of the Greek Civil War during 1944–45, RAF aircrews operated under very strict rules of engagement, and the need to be precise and proportionate in attacks on insurgent strongholds within the ambiguous urban environment was emphasised by the General Officer Commanding, General Scobie. As a result, collateral damage was kept to an absolute minimum. This was in stark contrast to the insurgents' brutalisation of

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<sup>44</sup> *ibid.*, p. 98.

<sup>45</sup> *ibid.*, p. 146.

the civilian population; conservative estimates from the period suggest upwards of 10 000 Athenians had been killed by the Communists in the space of three months.<sup>46</sup> Although Athens was the focus of Communist effort, atrocities were committed elsewhere in Greece during the same period. These factors, in combination, did much to turn Greek popular opinion against the insurgency, and consolidated the average person's view that the British were there to support the legitimate Greek Government and to preserve democracy. The RAF's reputation was enhanced even further by the fact that it was responsible for bringing in much needed food supplies for a local population which had suffered many deprivations during the German occupation. However, as it was observed above, scarcely three years later, when Britain became embroiled in another counterinsurgency effort, this time in Malaya, the intelligence apparatus in that theatre was rudimentary and air targeting was not as precise or timely as it could have been. Developing theatre-level intelligence machinery cannot be done overnight, especially if the host nation lacks viable internal security organisations, so this must be borne in mind when intervening in COIN or irregular warfare scenarios in future.

Intelligence lies at the heart of any military endeavour, at all levels of conflict, and one of the greatest misconceptions in recent years is that COIN (or irregular warfare) and strategic effect are mutually exclusive.<sup>47</sup> With the preponderance of intelligence effort being devoted to the day-to-day tactical battle in Iraq and Afghanistan in recent years, the importance of strategic targets has been forgotten in some quarters. While it is true that an insurgency will typically have fewer material targets compared with a counterinsurgency force, as was discussed above, insurgencies often morph into regular forces and develop force structures and equipment levels which make them vulnerable to conventional attack. Further, insurgencies have key leadership figures, who comprise strategic targets, whether this means their being killed or captured. As vital as the 'understand' function (the wider intelligence appreciation of a particular context) is in current operations, we should not forget old-style targeting methods and strategic targeting intelligence, either. The campaign in Libya is a good case in point here. While the main priority for UK and French, and then NATO, air power was to prevent the Gaddafi regime from attacking civilians, thus explaining why regime fielded forces received top priority, it also became important to degrade the regime's infrastructure and security apparatus.<sup>48</sup> Then, from May 2011 onwards, greater thought was given to the type of strategic targets which would undermine regime morale and cohesion, and cause Gaddafi to lose face—very damaging in the tribal Arab world.

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46 Goulter, 'The Greek Civil War: a National Army's counter-insurgency triumph', p. 1023.

47 See, for example, the Foreword to Wing Commander Glen Beck, *Offensive Air Power in Counter-Insurgency Operations: Putting Theory into Practice*, RAAF Air Power Development Centre Working Paper No. 26, Air Power Development Centre, Canberra, 2008.

48 House of Commons, Defence Committee, 'Operations in Libya', Section 3, NATO, 2011.

Another possible reason why strategic effect has been downplayed or disregarded in counterinsurgency or irregular warfare is that the campaign planning tools applied over the last decade of *supported* and *supporting* have inclined people to the view that air forces are always operating in the latter capacity, and this supporting role has been equated purely with tactical effect. This has had a very detrimental impact on independent air forces, because the core role for most independent air forces is strategic effect and it is what differentiates them from organic aviation. In the UK during the last 10 years, any mention of strategic effect in joint circles was disparaged as ‘air force insecurity’ or an ‘air force hobbyhorse’. In an effort to mollify the critics, the RAF dispensed with any references to strategic effect in the 4th Edition of its Air Power doctrine.<sup>49</sup> While well intentioned, this action serves to illustrate the dangers of not keeping certain roles and capabilities at the forefront of peoples’ minds, because there were debates within the Service as to whether it would be appropriate for the RAF to emulate the US Marine Corps’ organic aviation model. Then, during the 2011 Libyan campaign, the RAF had difficulties finding intelligence professionals with what had been described by some senior commanders as ‘old-fashioned’ targeting skills.<sup>50</sup>

The view of air power, and air forces, in particular, as *supporting* mechanisms has had other deleterious effects. The irony is that independent air forces have now become very good at air support, so many of the capabilities they provide and tasks they perform are conducted routinely and some have been taken for granted. The ability to service calls from troops in contact in a timely fashion in Afghanistan has been a particular source of pride for both the USAF and the RAF, but, ironically, this has led to some Army seniors saying that land forces are becoming almost too dependent upon air power for effect in the battlespace and the view that fielded artillery is the only support weapon required!<sup>51</sup> On a positive note, at least there is a readily identifiable unified planning process in place, in contrast to the first half of last decade, when air power was considered an afterthought by many theatre-level commanders. A RAND study of 2006 noted, ‘air power is usually the last thing that most military professionals think about

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49 Air Staff, Ministry of Defence, AP 3000: *British Air and Space Power Doctrine*, 4th Edition, Ministry of Defence, London, 2009.

50 House of Commons, Defence Committee, ‘UK Contribution’, pp. 4–5.

51 See, for example, the Canadian Army forum, *Army.ca.artillery*. Reference was made to the Multi-Launch Rocket System (sometimes written as MRLS) reducing ‘ground troop’s reliance on close air support to protect them from enemy fire’. It is acknowledged within UK defence that effects within the military sphere will be increasingly dependent upon cross-component capabilities, so views of the type expressed above may diminish over time and with increased operational experience. See also: Ministry of Defence, DCDC *Strategic Trends Programme*, ‘Future Character of Conflict’, Ministry of Defence, London, 2014, p. 14.

when the topic of counterinsurgency is raised.<sup>52</sup> While the RAND study made the observation that this comment also applied to some Air Force personnel, what the authors were really alluding to were land commanders. One of the main reasons why this was the case is that air-land integration was itself deficient. It was not merely that air power's application to counterinsurgency was under-appreciated; it was the fact that the joint air-land machinery was not well oiled, or was just broken! When the UK Ministry of Defence analysed the shortcomings of air-land integration during the first stages of the campaign in Iraq, the conclusions were scathing:

There is not a clear and commonly agreed view of how Land and Air components interact in a Joint campaign. We assume interaction and synergy, but such concepts are not adequately described in Joint or Land doctrine ... The Army and the RAF need to define and make explicit how land and air operations interact, and how they contribute to campaign success.<sup>53</sup>

The fact that UK air and space doctrine is now a joint publication means that all the Services will have a common understanding as to what Air-Land or Air-Maritime Integration actually involves, and this is a significant advance.<sup>54</sup> However, one criticism may be that doctrine still fails to articulate properly as to what the main mechanisms for integration are.

Another one of the areas which demands greater conceptual and material investment relates to enablers, and chief among those enablers of air power is force protection. Military seniors and politicians travelling in and out of theatres of operation have not always appreciated the 24/7 effort which goes on behind the scenes to ensure the safety of air power assets, and it has required events such as the 2012 attack on Camp Bastion in Afghanistan to reinforce the point that air power has to be defended properly. On 14 September of that year, 15 heavily-armed Taliban fighters infiltrated the base, killing two US Servicemen<sup>55</sup> and wounding 17 other US and UK personnel, as well as destroying six USMC Harriers. US and RAF Regiment troops killed 14 of the Taliban attackers, and the surviving insurgent was captured and interrogated. When the UK Defence Select Committee published its report on the attack, it revealed that there were several serious shortfalls in force protection. It was felt that there had been insufficient

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52 Alan J Vick, Adam Grissom, William Rosenau, Beth Grill & Karl P Mueller *Air Power in the New Counterinsurgency Era: The Strategic Importance of USAF Advisory and Assistance Missions*, RAND Corporation, Santa Monica, CA, 2006, p. 109.

53 UK Ministry of Defence, DGD&D/2/400, Nov 2003

54 Ministry of Defence, Joint Doctrine Publication (JDP) 0-30, *UK Air and Space Doctrine*, Development, Concepts and Doctrine Centre, Shrivenham, July 2013. See esp. p. 4-1.

55 Lieutenant Colonel Christopher Raible and Sergeant Bradley Atwell, USMC.

attention paid to the threat of external attacks, and that the specific point of weakness lay with the failure to man all the observation towers around the base perimeter.<sup>56</sup> The fact that the situation did not spiral out of control owes much to the bravery of both US and UK personnel, especially the RAF Regiment. But this was an attack which should not have happened, and, once again, underscores the failure to learn lessons from the past. During the Vietnam conflict, air power was the US operational centre of gravity, and after losing scores of aircraft to Viet Cong and NVA attacks on bases, the Americans developed a concept of layered defence.<sup>57</sup> Understandably, the experience in Vietnam was so traumatic that many lessons from that conflict were forgotten. As a former US Vice Chief of Staff, General John Keene, said: 'after the Vietnam war, we purged ourselves of everything which dealt with irregular warfare or insurgency, because it had to do with how we lost that war.'<sup>58</sup> As the USMC found to its cost during the Taliban attack on Bastion in 2012, a focus on defending what is *inside* the wire had blinded them to the external threats. In contrast, the USAF has at least attempted to resuscitate an expeditionary force protection capability. Within the last decade, it has called upon the RAF Regiment for advice on force protection issues, and has modelled much of its tactical doctrine on the British approach, including the importance of patrolling outside a base and working with the local community. Ironically, the US Army Air Forces modelled its Air Base Security Battalions in World War II on the RAF Regiment, but after the end of the Cold War, base security was downplayed by the USAF.

When Churchill laid the foundations of the RAF Regiment in 1942 by speaking about a 'force of fighting air-ground men', his concept was more profound than most people realise.<sup>59</sup> The point he was trying to make was that in order to defend air power properly, you must understand its value. This was illustrated graphically in Iraq in February 2007, when an improvised explosive device (IED) 'daisy chain' detonated under the port wing of an RAF C-130 after landing on a tactical landing strip near Al-Amarah. A British Army unit had been tasked with airfield control and clearance, but because of its unfamiliarity with clearance tactics, techniques and procedures, the insurgents and the IED they laid were not spotted. Without secure basing, it is not just air power which loses freedom

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56 House of Commons, Defence Committee Report, *Afghanistan—Camp Bastion Attack – Thirteenth Report of Session 2013–14*, Volumes I & II, 16 April 2014, viewed 1 August 2014, <<http://www.parliament.uk/business/committees/committees-a-z/commons-select/defence-committee/news/13th-report-afghanistan-camp-bastion/>>.

57 Roger P Fox, *Air Base Ground Defense in the Republic of Vietnam, 1961–1973*, Office of Air Force History, Washington, DC, 1979, esp. Chapter 3.

58 Brian Burton, & John Nagl, 'Learning as we go: the US Army adapts to counterinsurgency in Iraq, July 2004–December 2006', *Small Wars & Insurgencies*, vol. 19, no. 3, September 2008, p. 303.

59 Quoted in Fox, *Air Base Ground Defense in the Republic of Vietnam, 1961–1973*, p. 278.

of manoeuvre; it is everything which depends upon air power for effect. This was amply demonstrated in Iraq during the final year of the UK's involvement in the south of the country. As the Mahdi Army and other insurgent groups increased their rocket and mortar attacks on Basra, the RAF was compelled to withdraw some of its most significant air assets to bases further back in theatre.<sup>60</sup> This was particularly the case with larger aircraft, such as the Nimrod R1, but the time spent in transit from bases outside of Iraq was time not spent on patrol. The British forces quickly found themselves in a deteriorating security situation, and could not project beyond the Basra airport enclave. As the 19th century French Indochina Governor, Marshal Lyautey, noted, 'a base which does not radiate is blind, and a base which is blind is defeated'.<sup>61</sup>

## CONCLUSION

Over the next decade, we are unlikely to see a reduction in irregular warfare; it has been an almost constant companion for the last 70 years, so there is no reason to suppose that our strategic context will change radically in the mid- to near term. However, there are already worrying indications that the US and the UK see irregular warfare, especially COIN, as a thing of the past. The US Army's Training and Doctrine Command has recently removed the term 'irregular warfare' from its doctrinal lexicon, and most of the conceptual work done over the last two years has been focused on the US 're-balance' strategy and Air-Sea Battle.<sup>62</sup> Meanwhile, the UK military is posturing for contingency operations, as if contingency forms another genre of warfare! The danger of couching everything in terms of 'contingency warfare' is that it is seen as a cheap option, employed on the basis of 'if and when required'. As the campaign in Libya proved, a sliding scale of air effect was required in that conflict, both strategic and tactical, kinetic and non-kinetic, and practitioners had to draw upon old as well as new skills. It was a contingency operation, but it also classed as irregular warfare. The principal conclusion has to be that drawing hard and fast delineations between strategic contexts or types of warfare is hazardous.

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60 'Rocket attacks on Basra airbase increase', *The Daily Telegraph*, 20 August 2007; and D Barrie, 'Basra Airbridge', *Aviation Week & Space Technology*, vol. 163, no. 15, October 2005, p. 57.

61 Gras, *Histoire de la Guerre d'Indochine*, p. 238.

62 Robert B Scaife, 'The regularity of irregular warfare', *Small Wars Journal*, 16 October 2012, viewed 2014, < <http://smallwarsjournal.com/jrnl/art/the-regularity-of-irregular-warfare>>.

## DISCUSSION

*Group Captain David Millar (RAAF – Department of Defence, Strategic Policy Division):* I'd like your comment on the sophistication of adversaries in irregular warfare in the sense that where your opponents were irregular warfare opponents in the Stone Age, one could bomb them back them to the Stone Age. But as your adversaries become more sophisticated with the technology they use, they become more susceptible to the influence of air power and our ability to attack fixed installations and sophisticated networks.

*Dr Goulter:* You're absolutely right and for obvious reasons we can't go into details about that. It's a tricky one and I'm sort of treading on eggshells a bit with this. In many ways the advent of the technologies that we've developed over the last 20 years or so has made it more difficult for us, but there are many advantages in how the intelligence apparatus deals with current threats. There are swings and roundabouts in this business. My point is that for things like cyber, for example, one of the problems that certainly the UK faced was that they'd lost the initiative, and there was too much time wasted with departments wrestling among themselves as to the policy direction. And very often you get an academic discourse. Back in the 1990s you had a couple of academics by the name of the Tofflers saying that, 'Cyber is going to be one of our vulnerabilities in the future'. We were not necessarily paying attention, but others were. So I think we have to be careful about how we articulate our strengths and weaknesses in wider forum. Also we have to be careful about developing the doctrine and policy which then can lead to us getting the physical abilities in the right order. I think this is where certainly the UK was on the back foot for a long time because you had agencies arguing with each other. Again in the Vietnam setting, this was a classic case where somebody said, 'We need to have intelligence fusion in South Vietnam'. But because the CIA and other agencies were bickering among themselves, that fusion of intelligence didn't happen and the rest, as they say, is history. But it's a great point. I'll perhaps have a chat with you afterwards.

*Air Vice-Marshal Bob Richardson (RAAF Retd):* In our region it is generally regarded that the Malayan Emergency was an extremely successful British-run counterinsurgency operation, and I think it is pretty clear that you didn't see much effective air power in that. Do you think that air power could have been used more effectively?

*Dr Goulter:* Again, it gets back to this point that, if there'd been less sort of bespoke treatment of experiences and if there'd been a transfer of lessons forward, then I think that the initiative might have been there. For me, my default setting is 'Get the intelligence apparatus in there as quickly as possible because that is at the heart of counterinsurgency'. But, you know, our experiences throughout the Western world is it takes the best part of two or three years to get the intelligence apparatus really fully functional in those settings. So, therefore, you lose the

initiative and you're on the back foot. If the population is the prize, you need to think about campaign authority, and if you're being less than precise and proportionate to begin with, you end up alienating a lot of people initially. So for me, intelligence is something you must take seriously. It's a force multiplier and it goes back to my point about the end of the Cold War when there were Treasury types who said, 'Well now that the Cold War is over we can downsize the intelligence apparatus'! It's what I would say in the vernacular was a bit of a 'Duh' moment. In an age of uncertainty, you need more intelligence, not less. So there were very naïve views about what intelligence is there for and what you need to do with intelligence, but it's a fair point.

*Air Marshal David Evans (RAAF Retd):* We thank you for bringing out many things that people don't like to talk about, like political will which is something that obviously is not much use going into because we can't control it. However, I must say that I'm underwhelmed by the fact that we haven't won a war since 1945—now I'm talking about wars that Australia has been in. Korea is a stalemate, Vietnam was a loss, in Iraq they're still killing each other and it's less stable than when we went into it, and Afghanistan is anybody's guess. One of the things that concerns me of many, if you have any thought that there is still some value in the principles of war, is that they seem to be totally ignored. One of the main ones, supposedly, is the cardinal one of the aim, selecting the aim. Now I have not been able to identify what I would say is a specific aim in any of those wars, if you like to call them wars, that we've been involved in. We went into Vietnam and the American President said, 'We're not trying to win this war'. That's a great way to go, it must have been great comfort to the enemy. What was the aim in Iraq? Has it been attained? And in Afghanistan we went in to stop terrorist training grounds; it's gone a little further than that. It's the same as Vietnam. We said, 'All right, we're going to train the Vietnamese, hand over to them, and they'll be able to handle it'. We're saying the same thing about Afghanis, but I haven't much faith in that. Would you like to comment on that, what I'm saying about the aim?

*Dr Goulter:* One of my particular hobbyhorses is the lack of strategic thinking, especially in the UK context. I was rather depressed when I came back from the United States, where I'd been teaching nothing other than 'strategy', to be told by the then Commandant, 'You have to realise Christina, it's all about the operational level'. And I went, 'Gee, okay'. I think this is a fallout from the Cold War period where operational level and tactical level excellence was absolutely everything, because NATO was the overarching thing that was dealing with strategy, so smaller state effort just had to concentrate on the operational level. Now there has been wide discussion about how the UK has had a deficit in strategic thinking—absolutely right. There are a number of reasons, like the one I just alluded to, but it also is a function, dare I say it, of politicians who don't have any 'uniformed' experience. So the way that they have used the military instrument perhaps hasn't been with the thought and care that previous generations may have had, but



we really need to get back into strategy. I think another reason why particularly the UK has wrestled with this, is that it lost that sort of global purview, because of retreat from Empire. We used to be very good at a global perspective, but it has shrunk and shrunk and shrunk. Another aspect also, dare I say it, is lack of financing. So that has led to a defence mechanism that has been hand-to-mouth all the time. With electoral cycles being what they are, politicians were nagging the military instrument; 'I want quick results.' And especially with reference to counterinsurgency, we know that results are never quick and easy. It's a complex question but I think, generally, the Americans have been far better at the strategic stuff because they went through the trauma of Vietnam. They revised all their war college syllabi to focus on strategy first, and then everything else follows. But certainly some of the rest of us have really wrestled with it, but it's a great question. Thank you.



# THE BALKAN AIR WAR(S): AIR POWER AS A WEAPON OF FIRST CHOICE

DR PETER GRAY

*So the bomber got through to Milosevic after all.*

Sir John Keegan<sup>1</sup>

This opening quotation from the late Sir John Keegan was typical of the reaction in the United Kingdom to the cessation of Operation *Allied Force*, the NATO air operation designed to bring Serbian President Slobodan Milosevic to the negotiating table to discuss the status of Kosovo in 1999. *Allied Force* was unusual as modern operations go in that it was conducted exclusively by air assets with no linkage to a ground component—whether supporting or supported; unlike in later operations in Libya, there was no attempt to link operationally with indigenous ground elements such as the Kosovar Liberation Army (KLA). After many weeks of postulating that air power could not do it alone, it is little wonder that the celebrated military (in all senses of the word) historian should be slightly bemused by Milosevic's capitulation. This paper will analyse the use of air power in the Balkans over the period, concentrating on the Kosovo air campaign. It will show that, although air power may have been the weapon of first choice, this was not a case of 'air power doing it alone' as there were a number of other factors involved at the strategic and operational levels including diplomatic, political and economic. The paper will examine just what air power was able to do, what was achieved and what lessons can be taken from what General John Jumper has called an 'idiosyncratic operation'.<sup>2</sup>

## THE CONTEXT

When Tito's Yugoslavia began to unravel after the end of the Cold War, there was little in the way of literature to help the would-be analyst to gain an understanding

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- 1 John Keegan, 'So the bomber got through to Milosevic after all', *The Daily Telegraph*, 4 June 1999, p. 28. See also John Keegan, 'Yes, we won this war; let's be proud of it', *The Daily Telegraph*, 24 June 1999, p. 26. Contrast this with General Sir Michael Rose, 'Peacekeepers fight a better war than bombers', *The Sunday Times*, 20 June 1999, p. 26
  - 2 General John Jumper (Commander of US Air Forces in Europe and of Allied Air Forces Central Europe), 'Kosovo Victory – A Commander's Perspective', *Air Power Review*, vol. 2, no. 4, December 1999, p. 2.

of the passions and politics of the region; in many cases, what there was had been written either by apologists or as propaganda.<sup>3</sup> Since the early 1990s, there has been a massive increase in the material published ranging from detailed studies on the air wars, through personal recollections of peacekeepers and diplomats to broader serious academic works.<sup>4</sup> But the reader needs to beware that it is difficult to produce a history of the region, or some of its peoples, without 'taking sides'. This has been all the more complex because there are no clear divides between the good guys and the bad; there was no monopoly on atrocities or bad behaviour. Over the period of the dissolution from the secession of Slovenia in the summer of 1991 to the end of the air war over Kosovo in 1999, the same can be said of diplomats and their governments as of the literature.<sup>5</sup> The conflict has been portrayed variously as an ethnic clash, wars of religion through to a legitimate quest for self-determination.<sup>6</sup> At first sight, these labels may seem appropriate as Yugoslavia formed the borders between the Ottoman Empire and Austro-Hungary and on the east-west divide the boundaries between the Roman Catholic and the Greek Orthodox Churches with a serious overlay of Islam. That these boundaries changed over time causing instability and bitterness among the peoples is graphically detailed in Ivo Andric's Nobel literature prize-winning novel, *The Bridge Over the River Drina*. For much of the period of the dissolution of Yugoslavia, these divides were more smokescreens for rabid nationalism than genuine issues. After all, the Slovenes, Serbs and Croats were essentially all South

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- 3 Of the neutral material see Fred Singleton, *A Short History of the Yugoslav Peoples*, Cambridge University Press, Cambridge, 1985; James Gow, *Legitimacy and the Military: The Yugoslav Crisis*, Pinter, London, 1992; and Misha Glenny *The Fall of Yugoslavia*, Penguin, London, 1992. For historical material see Fitzroy Maclean, *Eastern Approaches*, Jonathan Cape, London, 1949; Rebecca West, *Black Lamb and Grey Falcon: A Journey Through Yugoslavia*, Macmillan, London, 1942; and for literature the classic work is Ivo Andric, *The Bridge Over the River Drina*, Allen and Unwin, London, 1959—the original was published in Serbo-Croat in 1945 and won the Nobel Prize for Literature in 1961. This latter work is less neutral, as is John Zametica, *The Yugoslav Conflict*, Adelphi Paper 270, International Institute for Strategic Studies, London, 1992.
- 4 A sample of these include Benjamin S Lambeth, *NATO's Air War for Kosovo: A Strategic and Operational Assessment*, RAND, Santa Monica, CA, 2001; Stephen T Hosmer, *The Conflict over Kosovo: Why Milosevic Decided to Settle When He Did*, RAND, Santa Monica, CA, 2001; Colonel Bob Stewart, *Broken Lives: A Personal View of the Bosnian Conflict*, HarperCollins, London, 1993; Richard Holbrooke, *To End a War*, The Modern Library, New York, NY, 1998; General Sir Michael Rose, *Fighting for Peace*, Harvill, London, 1998; James Gow, *Triumph of the Lack of Will: International Diplomacy and the Yugoslav War*, Columbia University Press, New York, NY, 1997; and Wolfgang Biermann & Martin Vadset (eds), *UN Peacekeeping in Trouble: Lessons Learned from the Former Yugoslavia*, Ashgate, Aldershot, 1998. There is an even wider array of journal articles.
- 5 Michael Dobbs & John M Goshko, 'Albright's personal odyssey shaped foreign policy beliefs', *Washington Post*, Friday 6 December 1996. Note also the German Government's unilateral recognition of Croatia and the Greek Government's steadfast refusal (and imposition of sanctions) to acknowledge the existence of the Former Yugoslav Republic of Macedonia.
- 6 On the latter see Peter W Gray, 'The impact of the dissolution of Yugoslavia on the International Law of Self-determination', unpublished MPhil thesis, University of Cambridge, 1995.

Slavs (the translation of Yugoslavia) who had arrived in the region in the 10th century and gradually separated assuming separate identities; the Bosnians were themselves ethnic Slavs many of whom converted to Islam under Ottoman rule.<sup>7</sup> The main genuinely ethnic divide was between the Slavs and the Albanians who considered themselves descended from the ancient Illyrians.<sup>8</sup>

Superimposed on the nationalism was the reality of economics with a basic divide between a richer north and a poorer south. Furthermore the legacy of two world wars left deep bitterness across Yugoslavia with some 1.7 million killed between the German invasion in 1941 and the end of the war; of these, some 1 million were killed in fratricidal violence between various groupings of which the communists and the fascists were the main, but by no means the only divides.<sup>9</sup> Tito managed to impose some order over the Cold War, albeit at the expense of imposing what was effectively an oppressive police state. After his death in 1980, the country resembled a pressure cooker waiting to explode with the economy and the status of the Kosovo Albanians key problem areas.<sup>10</sup>

Events in the Balkans came to a head in the summer of 1991 with the secession of Slovenia. This was following the end of the Cold War and in the immediate aftermath of the First Gulf War. Italy was obviously concerned with what was happening on its borders and was a dominant member of the European Union 'troika'. There was an atmosphere prevailing that this was Europe's backyard and that the problems could be solved without the direct assistance of the United States.<sup>11</sup> Although the Slovenian secession was peaceful, matters degenerated rapidly in the border areas between Serbia and Croatia, in Bosnia-Herzegovina which had a large Serbian population who opposed independence preferring to stay in a Serb-governed rump Yugoslavia, in Macedonia and in Kosovo. Over the next eight years, the international community watched the ethnic cleansing, the various horrors and atrocities amid cries that 'something should be done' and much hand-wringing. The overwhelming problem was that no country was prepared to deploy troops in meaningful numbers and with sufficiently robust rules of engagement.<sup>12</sup> The well-known NATO doctrinal phrases such as OPCOM and OPGON (Operational Command and Operational Control) gave way to

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7 Singleton, *A Short History of the Yugoslav Peoples*, p. 14.

8 *ibid.*, p. 11. Singleton makes the point that Albanian historians hold this view and it is difficult to prove or disprove either way as they are 'as mysterious as the Etruscans'.

9 *ibid.*, p. 206.

10 *ibid.*, pp. 271–272.

11 The 'troika' was essentially the foreign ministers of past, present and future European Union (EU) Presidency nations. See Gow, *Triumph of the Lack of Will*, ch. 3.

12 Gow, *Triumph of the Lack of Will*, ch. 5. See also Sir Michael Rose, 'Military aspects of peacekeeping: lessons learned from Bosnia, from a Commander's Perspective', Biermann & Vadset (eds), *UN Peacekeeping in Trouble*, p. 155.

cynical asides of 'Op Will' and, more usually, 'Op Won't'.<sup>13</sup> Similarly, John Boyd's well-known OODA loop became *Observe, Overreact, Deny and Apologise*. It took the now infamous massacres at Srebrenica in July 1995 to spur the international community into action; the so-called 'safe areas' had proved to be anything but safe.<sup>14</sup> This was followed by a mortar attack on Markale market place in Sarajevo on 28 August 1995, killing 30 people. Operation *Deny Flight*—the imposition of a no-fly zone—had had more of an assuaging effect abroad than for the security of the Yugoslav population and this was changed into a full-blown air campaign.

NATO launched Operation *Deliberate Force* on 30 August 1995. The Operation continued until 20 September and was aimed primarily at Bosnian Serb military targets.<sup>15</sup> NATO flew 3515 sorties dropping 708 precision bombs and 311 freefall bombs over the period.<sup>16</sup> For presentational purposes, the NATO attacks were carried out as part of the campaign to protect the safe areas—directly and indirectly. It is obvious, however, from American envoy Richard Holbrooke that any coercion of the Bosnian Serbs towards a peace settlement would be beneficial.<sup>17</sup> Furthermore, the air campaign was materially assisting an ongoing Croatian Army/Muslim ground offensive—much to the discomfort of the Bosnian Serb Army which found that the concentrations of tanks and artillery necessary to counter this assault made excellent targets for NATO air power.<sup>18</sup> Holbrooke suggested to Milosevic that the air campaign was not coordinated with the ground offensive, but later in his account admits to having advised President Tudjman of Croatia as to which towns his troops should occupy to facilitate later negotiations.<sup>19</sup> Albeit the on a limited scale, the links with ground forces were evident and clearly affected the campaign in contrast with the later conflict over Kosovo. The marked escalation in external military involvement resulted in a new momentum for the talks process. The Dayton talks followed on 1 November 1995 and lasted three weeks. Wright-Patterson Air Force Base in Dayton, Ohio, was chosen as the venue for substantive talks between the erstwhile warring factions. The delegates arriving from the Balkans by air had to walk past ramps

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13 See Air Commodore Stuart Peach, 'The airmen's dilemma: to command or to control', Peter W Gray (ed.), *Air Power 21: Challenges for the New Century*, The Stationery Office, London, 2000, p. 127, for a less cynical description of these terms.

14 Gow, *Triumph of the Lack of Will*, pp. 271–273.

15 Gow, *Triumph of the Lack of Will*, pp. 277–279. For a detailed account see Colonel Robert C Owen, USAF, *Deliberate Force: A Case Study in Effective Air Campaigning*, Air University Press, Maxwell Air Force Base, AL, 2000.

16 *A Short History of the RAF: Chapter 6 – Return to Expeditionary Warfare*, p. 298, viewed 5 February 2014, <<http://www.raf.mod.uk/history/shorthistoryoftheroyalairforce.cfm>>.

17 Holbrooke, *To End a War*, pp. 145–150.

18 Thomas Quiggin, 'Do airstrikes amount to an effective policy?', *RUSI Journal*, April/May 1999, p. 17, is quite specific over the involvement of regular Croatian Army troops.

19 Holbrooke, *To End a War*, pp. 147 & 160.

laden with operational aircraft, leaving the Serbs in no doubt as to the scale of air resources available to an American-led coalition. For many commentators and participants the use of air power was decisive. Carl Bildt, however, correctly brings the enthusiasts back to earth with the reminder that the key events were political rather than military—not least because the US administration was at last prepared actually to recognise politically the Bosnian Serb entity (this had stymied earlier attempts at a settlement).<sup>20</sup>

### *ALLIED FORCE*

As has already been intimated, the Kosovar problem was complex and a running sore in the region. Solving this problem was never going to be done with a linear solution, or 'end state' so beloved of teachers of campaign planning in staff colleges! Kosovo had autonomous province status under Tito, but was an integral part of Serbia, at least to the Serbs. It had sizeable economic resources and the Serbs had deep emotional ties to the area.<sup>21</sup> These are well documented elsewhere and for the sake of this paper, it is sufficient to go back to 1987 when Milosevic and his Serbian Socialist Party (SPS) latched onto the plight of the Kosovo Serbs as a vehicle for his own rise to power.<sup>22</sup> He stripped Kosovo, and the Hungarian majority area of Vojvodina, of their status as Autonomous Provinces and vainly attempted in the former to redress the population balance by importing Serbs who had been displaced from other regions. The ethnic Albanian population still outnumbered the Serbs by a huge margin. Their 'shadow' economy and political system functioned well; while Sarajevo was under siege and Belgrade was in the grip of economic sanctions, Pristina appeared almost prosperous in comparison with other parts of the Balkans—not least because the Kosovo Albanian economy was supported by hard currency remittances from the diaspora.<sup>23</sup> This stability was maintained under the benign rule of Ibrahim Rugova whose pacifist stance tended to reduce the possibility of strife.<sup>24</sup> But no-one was naïve enough to doubt

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20 Carl Bildt, 'Review essays – Holbrooke's history', *Survival*, vol. 40, no. 3, Autumn 1998, pp. 187–188.

21 Lambeth, *NATO's Air War for Kosovo*, p. 182.

22 See for example, Tim Judah, *The Serbs: History, Myth, and the Destruction of Yugoslavia*, Yale University Press, New Haven, CT, 1997. The Kosovo Serbs saw themselves as outnumbered and beleaguered by the Albanians in the Province.

23 But only by prevailing Balkan standards. The author, in his capacity as a Balkans analyst in the Cabinet Office, visited Kosovo in 1993. Two Albanian youths were shot dead in the street outside the author's hotel at about 5.00 am.

24 Rugova was a quietly spoken academic who shunned all question of militant action against the Serbs. He would expound at great length how a softly-softly approach was the only way to challenge the Serbs.

that Milosevic would not hesitate to inflame the situation if domestic politics required a diversion, or if the Albanians openly espoused independence.

The aftermath of the Dayton agreement traumatised the ethnic Albanians, particularly as Lord Owen's consistent calls for the plight of Kosovo to be included in the settlement were ignored. Their policy of nonviolence had not worked. The subsequent (but unconnected) collapse into anarchy of Albania in 1997 resulted in an almost unlimited supply of weapons becoming available to the KLA, and the scope for armed insurrection suddenly opened. This mounting frustration, along with a massive influx of light weaponry, resulted in the KLA growing from a minor bunch of disillusioned expatriates into a serious threat to the Serbian authorities. The cycle of violence expanded with the inevitable counteroffensives through 1998. The spectre of massacres, ethnic cleansing and other atrocities prompted the international community to attempt a negotiated settlement through the Rambouillet talks process.<sup>25</sup> Milosevic could not accept the terms on offer, not least because they would have allowed NATO unbridled access to any part of Yugoslavia and was therefore an excessive infringement of sovereignty.<sup>26</sup> Having come to, and maintained, power on the basis of rabid nationalism, he could not back down without some semblance of a fight. There was a clear risk of secession, and the detail of the agreement contained, from Belgrade's perspective, serious erosions of Serbia's sovereignty.<sup>27</sup> Acceptance would have been political suicide for Milosevic—not a trait for which he was renowned.

Milosevic may have doubted the will of the international community and almost certainly bargained on NATO not being able to maintain its cohesion. He must also have hoped that Russia would not tolerate an open attack on a fellow Slav sovereign state and would have anticipated a veto on Chapter VII action in the UN Security Council. Although Serbia's own respect for international law was less than comprehensive, Milosevic may also have reckoned on the international community taking a conservative approach based on the absolute sovereignty of nation-states. In the event, Milosevic miscalculated. The West was quite clear that military action was justified as an exceptional measure to prevent the overwhelming humanitarian catastrophe that began to unfold.<sup>28</sup> Milosevic rejected the Rambouillet agreement and launched a new campaign against the

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25 For a detailed discussion on the international legal aspects of these talks see Marc Weller, 'The Rambouillet conference on Kosovo', *International Affairs*, vol. 75, no. 2, 1999, pp. 211–251. Weller has acted as counsel to the Bosnian Muslims and the Kosovo Albanians.

26 See *Interim Agreement for Peace and Self-Government In Kosovo*, 23 February 1999, viewed 5 February 2014, <<http://jurist.law.pitt.edu/ramb.htm>>. See in particular Chapter 7.

27 See also Hosmer, *The Conflict over Kosovo: Why Milosevic Decided to Settle When He Did*, pp. 12–16.

28 See Catherine Guicherd, 'International Law and the War in Kosovo', *Survival*, vol. 41, no 2, Summer 1999, pp. 19–34.



KLA with 40 000 Yugoslav Army (JNA) troops deployed. They forced thousands of civilians to flee generating 240 000 internally displaced persons; total figures over the course of the conflict rose to 850 000 who either had to flee or were deported by Serbian security forces, the JNA and paramilitary forces.<sup>29</sup>

NATO became increasingly convinced that punitive air strikes would be necessary, but that the bombing operation would be over very quickly.<sup>30</sup> This was an overly optimistic assessment based more on policy aspirations than on an analytical study of Milosevic, his associates, including his wife, and the secretive Serbian Socialist Party (SPS). The assessment was also based on a selective interpretation of the lessons they had drawn from Operation *Deliberate Force* and Operation *Desert Fox* over Iraq.<sup>31</sup> The other significant difference between the *Deliberate Force* and *Allied Force* was that the former concentrated on military targets, primarily in Bosnia where this new campaign was specifically intended to coerce the Serbian regime.<sup>32</sup> Air power doctrine consistently emphasises the importance of intelligence in planning air operations and this as true at the strategic level as it is in choosing specific target sets. It is significant that, at the time, there was no open dissent from the three to five days duration assessment in Washington, London or NATO.

The second factor in intelligence preparation became apparent once the campaign was underway and in subsequent debriefs of senior commanders after the event. It is clear that General Wes Clark (Supreme Allied Commander, Europe (SACEUR)) regarded the Serbian troops in Kosovo as being a top priority target set.<sup>33</sup> Given that at least part of the ethnic cleansing was being conducted by paramilitary forces, as opposed to regular units in traditional formations, this was not a particularly feasible course of action. More importantly, the plight of the units in Kosovo was irrelevant to Milosevic's perceptions of his own centre of gravity—which was his hold on power. This was not new; the practical aspects of this had been well understood over the previous years, especially in relation to the sanctions regimes in place where Milosevic and his cronies cared little for the plight of the ordinary Serb. The bottom line, in all senses of the phrase, was the economic interests of Milosevic's cronies in controlling hard currency

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29 UNHCR figures in 'UNHCR Global Report 1999 – Kosovo Emergency', viewed 5 February 2014, <<http://www.unhcr.org/3e2d4d5f7.html>>. See also Lambeth, *NATO's Air War for Kosovo*, p. 9.

30 Lambeth, *NATO's Air War for Kosovo*, p. 14.

31 Lawrence Freedman, 'The split-screen war: Kosovo and changing concepts of the use of force' in Albrecht Schnabel and Ramesh Thakur (eds.), *Kosovo and the Challenge of Humanitarian Intervention: Selective Indignation, Collective Action, and International Citizenship*, United Nations University Press, New York, NY, 2000, p. 423–424.

32 *ibid.*

33 Lambeth, *NATO's Air War for Kosovo*, p. 190 and General Wesley K Clark, *Waging Modern War: Bosnia, Kosovo, and the Future of Combat*, Public Affairs, New York, NY, 2001, pp. 243–245.

exchange (sent home by the Serbian Diaspora), energy supplies, tobacco and so on. Lieutenant General Mike Short as Air Component Commander took a more conventional air power planners' perspective on attacking more strategic targets.<sup>34</sup> From a strict intelligence assessment perspective this would have come closer to Milosevic's own centre of gravity, but in the early stages of the campaign NATO authorities would have had a difficult task to gain approval for attacks on regime targets. If one adds what Lambeth describes as Clark's 'aggressive micromanagement' to the mix, one may be forgiven for concluding that air operations should be left to those who understand them—airmen.<sup>35</sup>

Taking the question of the identification of centres of gravity a stage further, it is instructive to note that both Milosevic and the NATO nations fully understood the importance of Alliance solidarity.<sup>36</sup> It is therefore highly ironic that when he ramped up the ethnic cleansing, Milosevic did the one thing most likely to outrage the international community and eradicate the scope for any protests within the Alliance. The air campaign started on 24 March and, as Easter approached, there were calls, especially from Greece and Italy, for a suspension in operations both to respect the Christian festival and in the hope that negotiations could be resumed, but these were to no avail.

It is not for this paper to detail the unfolding of the air campaign, not least because others have already done so. It is, however, worth making some general comments. The first of these is that Milosevic and his regime were militarily capable and able to defend themselves.<sup>37</sup> The NATO forces were therefore confronted by wily opponents who were very circumspect about betraying their positions by using their radars. On the other hand, NATO was also constrained by the allied concerns over the possibility of friendly casualties which would be likely to weaken resolve within the Alliance (especially after US experiences in Somalia). The other constraint on NATO planners from which Milosevic would have taken solace was the very clear message that the air campaign would not be conducted in concert with a ground offensive. The initial attacks were designed to demonstrate the seriousness of NATO's determination to prevent the aggression in Kosovo and to degrade the defences, very much along the *Desert Storm* line.

Once it became clear that Milosevic 'the bully' was not only resistant to force, and was not going to fold within a few days, NATO was faced with the problem of

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34 Discussion with the author during US JFACC Courses on which the author taught at Hurlburt Air Force Base. Lambeth, *NATO's Air War for Kosovo*, p. 190.

35 Lambeth, *NATO's Air War for Kosovo*, pp. 190–191. Short used to regale audiences on the JFACC course with stories of this.

36 Hosmer, *The Conflict over Kosovo: Why Milosevic Decided to Settle When He Did*, p. 40.

37 For a full breakdown in the Soviet supplied SAM and radar systems see *The Military Balance 1998/1999*, International Institute for Strategic Studies, London, 1998, p. 100.

increasing the pressure. The problem then was in the various constraints being imposed by nations' capitals. These ranged from restrictive rules of engagement, considerable dispute over attacking dual-use facilities (such as power supplies from the same source to hospitals and to command and control facilities) and the wider avoidance of collateral damage. Poor weather in the early period was compounded by the need to attack from over 10 000 feet to prevent losses to anti-aircraft artillery. Nevertheless, spurred on by Milosevic's continued brutality in Kosovo the Alliance arguably became stronger, more resolute and more willing to expand its target portfolio, eventually encompassing many of the facilities Short would have preferred to attack from the beginning.

### SO WHAT DID AIR POWER DO?

Over the period 24 March to 9 June 1999 NATO succeeded in maintaining a 78-day offensive against Milosevic and the Serbian regime. It flew 38 004 sorties out of a planned 45 935, of which 10 484 were strike.<sup>38</sup> From a UK perspective it was interesting to note that many of the strike sorties were flown from home bases (in RAF Germany) with air-to-air refuelling support and the crews returning home to their families. This has echoes of the World War II strategic air offensive as well as modern operations with remotely piloted vehicles. Indeed, as the USAF Historical Studies Office has pointed out, *Allied Force* saw the first significant employment of these vehicles.<sup>39</sup> The air campaign did not do much in the way of damage to the fielded forces and other ground military targets, many of which were well concealed and dispersed. As the campaign increased in intensity, NATO attacked a wider range of target sets and showed no sign whatsoever of relenting or abating its efforts. It can therefore be reasonably concluded that the air campaign, in concert with a range of other factors, and in no sense 'alone', created a political atmosphere conducive to a return to the negotiating table.

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38 US Air Force Historical Studies Office, 'Fact Sheet – Operation Allied Force', viewed 5 February 2014, <<http://www.afhso.af.mil/topics/factsheets/factsheet.asp?id=18652>>.

39 *ibid.* But notwithstanding the extensive use of drones over North Vietnam and of AQM-34 Firebees 'near' North Korea from 1970 to 1973. See National Museum of the US Air Force, 'Fact Sheet – Teledyne-Ryan AQM-34Q Combat Dawn Firebee', viewed 5 February 2014, <<http://www.nationalmuseum.af.mil/factsheets/factsheet.asp?id=4044>>.

## SO WHY DID MILOSEVIC RETURN TO THE NEGOTIATING TABLE?

As with Operation *Deliberate Force*, NATO nations showed that, however reluctant they may have been initially to use military force, once engaged they were prepared to see the respective campaigns through to their logical conclusions. Milosevic's experiences at Dayton (Wright Patterson Air Force Base) should have left him in no doubt whatsoever that NATO under US leadership had more than enough materiel to maintain a prolonged air operation. Although Milosevic had doubted NATO nations' resolve, the fragility of the Alliance was considerably strengthened by his ethnic cleansing tactics in Kosovo. The scale of the executions and expulsions was such that the stability of neighbouring states was threatened with potential long-term problems looming; NATO nations had no real alternative but to find a way to getting the displaced population home.<sup>40</sup> Where there may have been doubts over the legality and legitimacy of the air campaign at its outset, the international responsibility to halt the atrocities was overwhelming.<sup>41</sup> Although a long way from Milosevic's thinking, he inadvertently provided a platform for the international community to take punitive (or protective, depending on the choice of language) action in the absence of a United Nations Security Council Chapter VII Resolution (which would have been vetoed by Russia and probably China); in doing so he advanced the cause of the Responsibility to Protect doctrine.<sup>42</sup>

Milosevic had also counted on support from Russia and although this may have been forthcoming in the United Nations, there was little or no prospect of them providing military support to Serbia.<sup>43</sup> In any event, Cold War stockpiles built up in Tito's Yugoslavia ensured that they had little need of military hardware. There was undoubtedly an exchange of military information between Russia and Serbia and probably between Iraq and the Serbs. Pan-Slavic support and anti-NATO rhetoric were all very well, but the Russian Government under Yeltsin had wider diplomatic and especially economic interests to pursue. Furthermore, it was not in the interests of either Russia or NATO for friction to escalate into conflict. Both sides were well aware that trouble in Yugoslavia had been a regular flashpoint for scenarios in Cold War exercise planning! The Russians had also convinced

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40 Milosevic's ground forces systematically confiscated passports and other documents to prevent Albanians returning.

41 See Nicholas Wheeler, 'The Kosovo bombing campaign', Christian Reus-Smit (ed.), *The Politics of International Law*, Cambridge University Press, Cambridge, 2004, p. 189 et seq. See also Nicholas J Wheeler, 'Reflections on the legality and legitimacy of NATO's intervention in Kosovo', *International Journal of Human Rights – Special Issue: The Kosovo Tragedy: The Human Rights Dimensions*, vol. 4, no. 3-4, 2000, p. 144 et seq.

42 *ibid.*

43 Hosmer, *The Conflict over Kosovo: Why Milosevic Decided to Settle When He Did*, p. 43.

themselves that NATO was contemplating ground operations which would have increased the risk of the conflict spreading.<sup>44</sup> Russia's diplomatic support ebbed away to the point that they were willing to endorse NATO's terms when they were tabled in June 1999. That Russia was so convinced of this possibility would have also swayed Milosevic into thinking a ground offensive likely. Russian attitudes were also affected by the new terms on offer which were undoubtedly more realistic than those on the table at Rambouillet.

On the home front in Serbia the initial exuberant support for Milosevic against NATO was ebbing away. The early days of 'rock and bomb' concerts, decking bridges with bullseye targets and mass demonstrations had given way to demoralisation, fatigue, hunger and fear.<sup>45</sup> The initial anger and resentment subsided into apathy, a not untypical reaction to a sustained bombing campaign as people's focus changes to survival under the pressure. As far back as World War II, where morale bombing was a stated objective, psychiatrists were aware that under such pressure it was important to differentiate between routine grumbling and the actions people took as a result of bombing.<sup>46</sup> Serbia had been under sanctions for some years by this stage and the economy was in poor shape. Basic food provisions were under pressure and the bombing of dual-use energy systems had meant that electricity, running water and all types of fuel were in short supply. Many jobs were axed, payments to pensioners cut and arguably most importantly for many Serbs, queues for cigarettes were huge.<sup>47</sup> The routine hardships obviously contributed to the state of demoralisation, but this was intensified by the belief in Serbia that NATO was deliberately targeting them as civilians, obviously totally unaware of the genuine NATO policies of avoiding collateral damage and the media campaign to say so. Milosevic's own propaganda actually backfired on him. Serbs were increasingly worried about the safety and wellbeing of themselves and their families. This was particularly the case in regions where high percentages of troops had been deployed to Kosovo sparking anti-war demonstrations who were now seeking a settlement at almost any cost.<sup>48</sup> Support for the SPS and its allied political parties waned to the point that some withdrew altogether.

As the NATO air campaign increased in intensity, attacks on key infrastructure targets wreaked increasing amounts of damage. Many above-ground military installations were destroyed. More importantly, command, control and communications targets were attacked and many destroyed. Electrical power

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44 *ibid.*, pp. 46–47.

45 *ibid.*, p. 51.

46 The National Archives, INF 1/292, Part 2, 'Home Morale and Public Opinion', 22 September 1941, produced by Stephen Taylor, MD, MRCP.

47 Hosmer, *The Conflict over Kosovo: Why Milosevic Decided to Settle When He Did*, p. 54–55.

48 *ibid.*, p. 58.

generating and distributing facilities were destroyed, as were petroleum and oil installations. Infrastructure targets such as bridges were also 'dropped'.<sup>49</sup> The bulk of these were located in Serbia—not in either Kosovo or Montenegro—and as such were firmly in Milosevic's hinterland. Arguably more importantly, a number of key dual-use factories and installations were owned by colleagues of Milosevic.<sup>50</sup> The reality was that Milosevic had held onto power through the SPS by allowing key individuals access to lucrative jobs and ownership opportunities. The SPS had operated through the worst of the sanctions period by maintaining a stranglehold on state-owned facilities and the black market alike. It was a classic Soviet period 'party' apparatus and as long as there was money to be made, and Milosevic was in a position to distribute influence and largesse, he was relatively safe in power. The problem for him by June 1999 was that NATO bombing had ground down the people and the economy to the point of basic poverty and there was little, if any, money to be made. As a direct result, his power base ebbed away. Whether by accident or design, NATO had attacked his strategic centre of gravity very effectively.

### AIR POWER AS A WEAPON OF FIRST CHOICE?

NATO went into Operation *Allied Force* with the experience of some eight years of involvement in the Balkans. Land operations, peacekeeping missions and monitoring exercises had had a chequered history, with Serbian and Bosnia Serb forces proving to be well armed, ruthless and determined foes. Furthermore, all European NATO countries had remorselessly continued the quest for peace dividends after the Cold War and defence budgets were continually being cut. From the US perspective, the situation was compounded for the Clinton administration by the humiliating experiences of Somalia. There was no appetite in any NATO nation for contested land operations in Serbia. Given that the Rambouillet terms were never going to be acceptable to the Serbs, an unacceptable stalemate resulted. Notwithstanding the institutional wishful thinking evident in the belief that a very short offensive would suffice, the only available options were a Nelsonian 'blind eye' or the use of air power.

In reality, Kosovo was too close to home for Europe and NATO to ignore—something had to be done and had to be seen to be done. The growing refugee crisis inside Kosovo and in neighbouring states was undermining their stability and causing shock waves across Europe as refugees made their way, legally or illegally, to join relatives already living abroad. Air power was therefore the only

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49 *ibid.*, p. 67. See also Anthony P Cordesman, *The Lessons and Non-Lessons of the Air and Missile Campaign in Kosovo*, pp. 151–174, viewed 5 February 2014, <<http://csis.org/files/media/csis/pubs/kosovolessons-full.pdf>>.

50 Hosmer, *The Conflict over Kosovo: Why Milosevic Decided to Settle When He Did*, p. 67.

available option. The key characteristics of air power, including reach, flexibility and precision, were complemented by its impermanence (normally seen as a disadvantage of air power, but invaluable in this case) and were all vital in the planning and execution of this coercive operation. But the key attribute of air power evident in this operation was its ability to strike hard and repeatedly at the opponent's strategic centre of gravity. This has to be clearly identified and done so with due cognisance of the enemy perceptions of his own vulnerability. It is not completely clear from *Allied Force* whether this was done clinically and scientifically, or arrived at through a happy combination of weapons availability, weather and standard targeting lists.<sup>51</sup> Equally importantly, the gradual escalation of the use of air power allowed NATO to retain its own strategic centre of gravity. Ironically, Milosevic contributed to this cohesion with his brutal escalation in ethnic cleansing.

Lambeth has lamented this 'gradualism' and the frustration caused by the slow start, gentle escalation, restrictive rules of engagement and stringent targeting criteria centred on necessity and proportionality.<sup>52</sup> It is certainly contrary to the airman's natural desire to strike straight into the strategic centre of gravity epitomised by Lieutenant General Mike Short's graphic statement that he would have preferred to have 'gone for the head of the snake on the first night'.<sup>53</sup> But as Lambeth points out, this 'gradualism' was essential for NATO coherence in an operation fought essentially for humanitarian purposes and in a context where vital national interests were not at stake.<sup>54</sup> At a deeper, more philosophical level, these frustrations, particularly amongst air campaign planners and professional airmen, are only likely to increase in any future conflict. The concept of 'shock and awe' on night one is difficult to reconcile with Just War thinking centred on proportionality and discrimination. Trends in thinking in this field towards a Responsibility to Protect will only serve to accentuate the difficulty in 'going for the head of the snake'; it looks as if the kid-glove approach will only increase the frustration.<sup>55</sup>

Given the wider diplomatic, political and economic factors involved in the decision-making in entering this conflict and its eventual conclusion, there can be no question of agreeing with John Keegan's assertion that air power did it alone. What does, however, come out of this operation is the importance of correct intelligence interpretation, the avoidance of policy-based wishful thinking and

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51 Conversation between the author and General Short.

52 Lambeth, *NATO's Air War for Kosovo*, p. 234.

53 Reported in Greg Seigle, 'USA claims France hindered raids', *Jane's Defence Weekly*, 27 October 1999, p. 3.

54 Lambeth, *NATO's Air War for Kosovo*, p. 234.

55 Wheeler, 'The Kosovo bombing campaign'.

finally the correct identification of the opponent's strategic centre of gravity. For a ruthless and aggressive civilian leader, this was never going to be his fielded forces in Kosovo. To make matters worse, they were not suitable targets for air power on the scale necessary for campaign success. The spat between the senior leaders over this issue and over micromanagement leads to the conclusion that the exercise of air power is best left to professional airmen experienced in its delivery and practised in its art. In reality, this can only be done by airmen from an independent air force.

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## DISCUSSION

*Flight Lieutenant David Bentley (RAAF – Australian Air Force Cadets):* How do you see the parallels politically between the cohesion of NATO under these circumstances? The cohesion of political support, for example, in 1982 for the British *Black Buck* missions into the Falklands, the previous political exercise of strength between Guatemala and Belize, which was carried out again by the British, and the current calls from people like John McCain in the US over the last three or four instances we've had with Syria and now with the current situation that we should be doing something. Therefore, that equals air power. Therefore, why aren't we bombing something now? How do you see that as positively or negatively influencing the execution of their role by professional air power people?

*Dr Gray:* Thank you for that question. It is very multifaceted and the benefit of multifaceted questions is that I can dine à la carte as to which bit I'd like to answer. They are different situations. If you take the Falklands in 1982, it was very, very different to a wider situation, to something that affects the international community—the international community and the European community in its wider sense, and add to that America and add to that America's Secretary of State and all of things she had to say about the region. That community was outraged by what Milosevic was doing; something had to be done. On the other side of that particular coin, you've got a huge, public, open coalition-cum-alliance in NATO. The dealings between each of them and getting agreement across all of NATO, with no abstentions, for everything you do are huge tasks. The Falklands was relatively simple in as much as it was part of the UK's national interests and it was defined as such. If the Prime Minister decided to go and do something, we'd just go and do it. Where that became very, very clever was on the political and diplomatic side. If you want to study it further, I commend to you Sir Lawrence Freedman's official history of the Falklands. Volume 1—which is the one most people put to one side to get onto Volume 2, which is operations—covers all of the United Nations debate and some of the political dealings. It was a masterpiece of



political and diplomatic activity that set everything up. What you also had on top of that was a genuine special relationship between Thatcher and Reagan: 'Can we have a bit of help on this? Can we have a bit of help on that?' You had what could be loosely termed as 'covert special relations', where it appeared to the world's media that France was selling more Exocets, whereas they were actually slipping a little bit of information our way as well. That sort of thing, where things can be done behind closed doors, where things can be done in the normal corridors of power, that is great. That is normal business compared to the NATO side of it. The 'something must be done over Syria' side of it is really complex. What you see overlain on things like the Kurds in the snow after *Desert Storm* and what you see in terms of the increasing problems in Yugoslavia is that the ethicists and the international lawyers start developing this 'doctrine' (small 'd') of the *right* of humanitarian intervention. Because one of the key sources of international law, one of the fastest to develop sources of international law, is the *righting* of jurists. So these academics sitting in their 'ivory towers' start writing international law. They start giving countries the *right* to intervene where a country has lost the will of the populace. Saddam Hussein had lost his sovereignty because of his persecution of the Kurds. The same was happening in Yugoslavia. What you see developing from Kosovo onwards, in international legal terms, is not just do we have a *right* to intervene but we have a *duty* to intervene and a 'responsibility to protect'. This responsibility to protect part of it is growing as we speak. Whose responsibility is it? Is it lone voices within senate or is it national governments, and who is actually going to step up to the plate and take on that responsibility? The world has shied away from a 'world policeman' and I think it will continue to do so.

*Air Chief Marshal Torpy:* My question is in the context of what brought Milosevic back to the negotiating table. I buy into your conclusions about air power being used in the 'right' manner. I also buy into the influence that Russian politics had on him as well. But also there was a very large ground force being assembled on his border. I would just welcome your views on the extent to which you felt that had an influence on his behaviour.

*Dr Gray:* It almost certainly had some influence. He understood all too well the constraints over the use of a ground force. I think what was probably more significant was the degree of frustration on the part of the Yugoslav people. I said in the early stages of my presentation that he didn't 'give a stuff' about what suffering the Yugoslav armed forces were going through. Some of the units that were deployed to Kosovo were there so long that the mothers and the wives of those forces took to the streets and rioted against the regime. This was something that was previously unheard of in Serbia. So, people on the street were turning against him from that side of it, and people on the street were turning against him from the state, the fear, the hunger, the depravation and so forth. The other critical bit which I didn't go into in any length was that when we came back to the

negotiating table in June 1999, the political terms on the table—the Rambouillet agreement—were radically altered to something that was digestible and politically acceptable. As for the forces assembling on the border, I think the point really is that you could have put fairly small forces on the border as long as Milosevic thought that they might be used; that would have been important. But it was a myriad of factors; it wasn't just air power alone, as I've stated. It's this complicated arena of reasons. It's not just a yes/no, or 0/1.

# AIR POWER IN AFGHANISTAN – THE EARLY YEARS

DR BENJAMIN S LAMBETH

Good morning, and g'day to all of my Aussie mates out there, some of whom I have not seen in quite a long time. It is great to be back in Canberra for what by now, after nearly three decades, has become the most rewarding recurrent gathering of friends of air power that I have been associated with anywhere. It has been a real credit to the intellectual leadership of a succession of RAAF chiefs going back to my good friend Ray Funnell's days that this conference series has been sustained for so long. I hope you will keep it up.

I want to thank Air Marshal Brown and also the APDC staff for having once again asked me back 'Down Under' for this event. It is great too to see so many other friends in this year's line-up, in particular General Moseley and Air Chief Marshal Torpy.

I will do the best I can to set you both up for telling the Iraq story in the next session by describing how what happened in Afghanistan the year before helped lay the groundwork for what you did.

Since he commented on my Kosovo book in the last session, I would just like to offer first as a coda to Peter Gray's excellent talk that even the best air weapon imaginable can never be any better or more effective than the strategy it is intended to serve—something both airmen and their political masters should never forget.

As some of you know, I published the RAND book back in 2005.<sup>1</sup> General Moseley, who sponsored this study when he was the Air Component Commander for US Central Command (CENTCOM), later put the book on his US Air Force chief's recommended reading list upon its publication. Thanks to that, the book soon gained traction throughout our Air University complex, and it has since been widely read by the students at our Air Command and Staff College and Air War College.

When I was here in Canberra for the 2010 RAAF conference, I was delighted to learn that the RAAF Chief of Air Force at that time, Air Marshal Binskin, had included it on his reading list for that year as well.

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1 Benjamin S Lambeth, *Air Power Against Terror: America's Conduct of Operation Enduring Freedom*, RAND, Santa Monica, CA, 2005.

So the book has definitely served its main intended purpose of helping to shape the air power thinking of the next generation of airmen both in the US and in other friendly air arms around the world.

Today I will first summarise for you what the campaign plan consisted of. I will then review how the war unfolded and what was unique about it, along with some problems that were encountered along the way. After that, I will say some words about what I believe we should remember most from the experience and about how Operation *Enduring Freedom* set the stage for what was soon to follow in Iraq.

Finally, I will leave you with some personal thoughts on the very different—and less successful—counterinsurgency effort that we have seen unfold in Afghanistan in the years since and how we might best learn from that more problematic experience.

To begin with, as we all know, the 9/11 attacks were a major wake-up call for the United States and the Western world as a whole. Not only did they catch us totally off guard, they also instantly defined early 21st century conflict. What had once been loosely called ‘the post–Cold War era’ for lack of a better term was transformed in the instant span of just one morning into the era of fanatical Islamist terrorism.

For Americans, the attacks represented something fundamentally new with respect to terrorism. They really occasioned a wholesale redefinition of the phenomenon, raising it from what was once just an occasionally lethal nuisance to becoming a core strategic threat to American and Western security. Worse yet, they showed a willingness on the part of the perpetrators to cause indiscriminate killing of innocent civilians, to the point of using any and all kinds of weapons that might be available, from jetliners full of fuel as de facto weapons of mass destruction all the way to nuclear bombs in the worst case.

As for the strategy picked by the Bush administration, as early as the next day, American officials began reviewing the options. It took little time to identify Osama bin Laden as the perpetrator of the attacks. Naturally, the first goal of the looming campaign became taking down al Qaeda’s military infrastructure in Afghanistan. Soon thereafter, when the Taliban regime harbouring bin Laden refused to hand him over, it became clear that another goal would be a complete take-down of that regime as well.

Overshadowing all else here was a determination by the administration to bend every effort to avoid killing innocent Afghan civilians, so as to avoid further inflaming anti-American attitudes throughout the Muslim world. Given that concern, CENTCOM’s strategy sought to rely to the fullest extent possible on precision guided weapons and also to minimise the US presence on the ground in Afghanistan so as to avoid creating any impression that the looming campaign would be an American replay of the Soviet invasion two decades before.

At the time the attacks occurred, not surprisingly, CENTCOM had no plan for dealing specifically with al Qaeda in Afghanistan, or even for dealing with Afghanistan at all. Yet in the space of just three weeks, the US Government pulled together an effective coalition, crafted the beginnings of a serviceable war strategy, moved needed forces and materiel to the region, developed alliances with indigenous anti-regime forces in Afghanistan, arranged for regional basing and overflight permission, laid the groundwork for an acceptable target approval process, and prepared to conduct concurrent humanitarian relief operations. That was a tall order in such a short time, and it worked out well.

I should add here that the strategy ultimately chosen by the administration focused solely on Afghanistan, with any consideration of possible measures against Iraq or any other state sponsors of terrorism to be held off until the more pressing goals in Afghanistan were achieved.

Next, let's look at how the war was envisaged. For the needed tools, CENTCOM planned to rely heavily on US Navy and Marine Corps carrier-based fighters, supported by US Air Force and British Royal Air Force tankers, owing to the limited availability of forward bases within easy reach of Afghanistan by land-based fighters. In this particular campaign, the RAAF did not figure in combat but sent a detachment of Hornets and B707 tankers to provide air defence at Diego Garcia, and that was a very important contribution from a political perspective.

CENTCOM also planned to rely on a constantly staring overhead umbrella of both space-based and air-breathing ISR (intelligence, surveillance and reconnaissance) platforms to provide both commanders and those fighting at the tactical level with battlespace awareness of the highest possible fidelity.

The emerging plan aimed at starting out with strikes by a combination of cruise missiles, carrier-based fighters, and heavy bombers against Taliban air defence, command and control, and leadership targets, with the goal of causing as much disruption of the enemy's leadership as possible within the campaign's restrictive rules of engagement, which I will say more about in a few minutes. Once those goals were met, the plan was then for the bombing to shift to enemy caves and bunkers, logistical nodes, troop concentrations, and training facilities, with the stress now on emerging targets of opportunity and on taking down the Taliban and al Qaeda piece by piece on the instalment plan.

The war began on the night of 7 October 2001 against pre-planned targets all over Afghanistan. The opening-night attacks were carried out by B-1s and B-52s operating out of Diego Garcia and by F-14s and F/A-18s from two carriers in the North Arabian Sea. Two B-2 stealth bombers flying all the way from the United States also took part in the attacks, with each delivering 16 satellite-aided JDAMs (Joint Direct Attack Munitions) against enemy early warning radars and headquarters buildings. The attackers were supported by carrier-based EA-6Bs to jam any enemy radar and radio transmissions.

After the second day, the night attacks continued into daylight and from then onward were sustained around the clock. After the tenth day, the bombing then shifted from fixed, pre-planned targets to emerging targets of opportunity, which were many. Those attacks sometimes included laser-guided bombs (LGBs) against Taliban vehicles that were moving as fast as 60 mph. At the same time, the insertion of a small number of Special Operations Forces (SOF) troops into southern Afghanistan as enablers for the air war marked the start of a fundamentally new use of air power in land warfare. In this phase, airborne forward air controllers flying overhead in F-14s visually confirmed targets that had been found by allied SOF teams on the ground and then cleared other aircraft to attack them.

As I mentioned before, the campaign's goal at the start was simply to bring an end to Taliban rule and to destroy al Qaeda's base of operations in Afghanistan, in the hope that this might, in turn, open a way for the eventual emergence of a more benign Afghan regime. But the goal was *never*, at least at the outset, conscious regime replacement aimed at democratic nation-building or anything else more extravagant along those lines. And true to that more modest goal, the Taliban regime was finally undone only 102 days after the 9/11 attacks.

Looking back on the campaign, there is no question that allied SOF teams and indigenous Afghan resistance fighters on the ground were essential to the success of that strategy. However, effective air and space power were the main factors that made it all possible. And contrary to much revisionist thinking that has arisen during the years since, the major combat phase of Operation *Enduring Freedom* in late 2001 and early 2002 was *never* a land-centric war in any way, but rather, at bottom, a SOF-enabled air war.

In a nutshell, Operation *Enduring Freedom* was, just to say it once more, a SOF-centric use of air power that amounted to a new way of war for the United States. Furthermore, even more than in *Desert Storm*, it showed the ability of the United States to conduct force projection from land bases located thousands of miles away from the war zone, as well as from aircraft carriers that were farther away from their targets than ever before in the history of naval air warfare.

The three most important ingredients that made these achievements possible, I believe, were:

- Long-range precision air power
- Consistently good real-time tactical intelligence
- And mobile SOF teams working in close harmony with indigenous Afghan resistance fighters and well enough equipped to maintain good situation awareness, operate independently, and avoid ambushes.

As for air warfare ‘firsts,’ the war saw the first combat use of the wind-corrected munitions dispenser and the Global Hawk high-altitude remotely piloted aircraft. It also saw the first use of Predators armed with Hellfire missiles and of the satellite-aided JDAM by the B-1 and B-52—during NATO’s air war for Kosovo in 1999, only the B-2 had been configured to deliver that munition.

In addition, the war saw the integration of Air Force terminal attack controllers with SOF teams on the ground in directing precision air attacks against time sensitive targets by both fighters and heavy bombers. That too was a new development in the use of air power in air-land operations. Operation *Enduring Freedom* also saw, for the first time, the use of CENTCOM’s greatly improved Combined Air Operations Center (CAOC) in Saudi Arabia, as well as the provision of live Predator video feed directly to airborne AC-130 gunship crews for their use in real-time attacks against pop-up targets of opportunity.

Finally, the war saw a continuation of some trends that were first set in motion during the 1991 Gulf War. During *Desert Storm*, precision weapons accounted for only nine per cent of the munitions dropped. Yet they totalled 29 per cent in Operation *Allied Force* over Serbia and nearly 60 per cent in Operation *Enduring Freedom*. That overall percentage grew even more a year later, when some 70 per cent of all the bombs dropped on Iraq were precision guided.

In addition, thanks to the heightened availability of precision guided munitions (PGMs) and the greater number of aircraft types now able to deliver them, the number of precision weapons expended per combat sortie also rose dramatically over time. In *Desert Storm* that number was 0.32 per sortie, in *Allied Force* it was 0.73, and in *Enduring Freedom* it was 1.66. In other words, *every* combat sortie this time was mission-effective.

That growth in force leverage, more than doubled since Kosovo in 1999, reaffirmed the newly emergent fact that one can now speak routinely not of the number of sorties it takes to engage a given target, but rather of how many different aim points can be struck during a single sortie.

Yet another trend that continued in *Enduring Freedom* had to do with extended-range operations. In *Desert Storm*, the percentage of tanker sorties flown among the total number of sorties recorded was 12 per cent. In *Allied Force* it was 20 per cent and in *Enduring Freedom* it was 27 per cent.

By the same token, long-range bombers have delivered a steadily increasing percentage of overall numbers of munitions expended throughout the succession of American and allied combat involvements since *Desert Storm*. During the First Gulf War, it was 32 per cent. In *Allied Force* it was 50 per cent and in *Enduring Freedom* it was about 70 per cent.

This experience showed how our capacity for truly global force projection had finally matured by the dawn of this century. Who would have foreseen in years

past that a B-52 or B-1 configured with a fighter's targeting pod and a bomb bay full of 500-lb LGBs could become, in effect, an airborne close air support battle wagon with effective dwell time over a target area measured in hours rather than minutes? Or that sea-based fighters would be flying multi-cycle sorties deep into a landlocked country an hour and a half away from the carrier, with flight durations lasting as long as eight to ten hours, with sometimes that many inflight refuellings?

Also for the first time in air warfare, the major combat phase of Operation *Enduring Freedom* was conducted under an overarching ISR umbrella that stared down constantly in search of enemy activity. That umbrella was formed by a constellation of overlapping sensor platforms, starting with various satellites on orbit. It also included the E-3 AWACS, the E-8 JSTARS with its synthetic aperture and moving target indicator radars, the RC-135 Rivet Joint SIGINT aircraft, and the Predator and Global Hawk remotely piloted aircraft.

Finally, it included the U-2, the Navy's EA-6B, the EP-3 and ES-3 surface surveillance aircraft, and the F-14, F-15E, and Block 30 F-16C+ with infra-red imaging targeting pods, along with the Tactical Air Reconnaissance Pod System (TARPS) carried by the F-14.

The RAF's contribution included a Nimrod ELINT aircraft, Canberra PR9 reconnaissance aircraft, and an E-3D AWACS. For their part, the French Air Force contributed the Mirage IV for high-altitude reconnaissance, and the CIA used its I-Gnat remotely piloted aircraft.

This combination of sensors allowed a much-enhanced ISR input compared to what had been available before. It also allowed a degree of ISR fusion that set Operation *Enduring Freedom* apart from all earlier air wars.

Yet another innovation was the uniquely close synchronisation of air and unconventional land power. In that regard, SOF teams performed three major functions. First, they marshalled the unorganised forces of the Northern Alliance. Second, they built small armies out of Pashtun tribesmen in the south. And third, they provided accurate and validated target information to combat aircrews for conducting precision air attacks. These roles were all highly improvised, and they involved a fundamentally new symbiotic relationship between strike aviation and the SOF community.

I would add here that the integration of Air Force joint terminal attack controllers (JTACs) with allied SOF teams was perhaps the war's single greatest tactical innovation. Terminal attack controllers on the ground would rack and stack a dozen or more fighters and bombers like layers of a cake over a portion of the battlefield and then would talk pilots' eyes onto targets.

Also, as the war shifted from pre-planned fixed targets to emerging targets of opportunity, aircrews would typically launch without pre-assigned targets. By the time major combat ended in mid-2002, some 80 per cent of all targets struck



had not been pre-planned, but rather were generated while strike aircraft were en route to their holding points. In a new hallmark of air power's flexibility, pilots were told, in effect: 'Just fly to Afghanistan and we'll give you your target coordinates after you get there.' That is something that would have been impossible, even a decade ago.

By every measure that counts, Operation *Enduring Freedom's* major combat phase was a resounding success as far as it went. Never before in modern times had the United States fought an expeditionary war so far removed from its base structure. The tyranny of distance that dominated the campaign redefined the meaning of endurance and made for an unprecedented test of American staying power.

One B-2 sortie lasted 44.3 hours from take-off to landing, becoming the longest-duration combat mission flown in air warfare history. Engine oil was the main limiting factor. In a similar event, an F-15E sortie lasted 15.5 hours to become the longest-duration fighter combat mission ever flown—fighters are not supposed to fly that long! If I am not mistaken, that was the one that got al Qaeda's military chief, Mohammed Atef.

As I said before, the war saw the longest-range carrier-based strike operations conducted in the history of naval air warfare. And it was not uncommon for fighter sorties to last 10 hours or more. People rather than hardware made for the main limiting factor in CENTCOM's ability to maintain a persistent presence over Afghanistan.

To be sure, for all the achievements I have listed, the war was not without its inefficiencies. To begin with, much as in the case of NATO's air war for Kosovo in 1999, some major bottlenecks in getting target approvals under tight time constraints came to light. And herein lies one of the new predicaments of modern air power.

Thanks to the revolution in ISR and improved communications connectivity, the sensor-to-shooter cycle time was reduced from hours often to single-digit minutes. Yet an oversubscribed target approval process within CENTCOM often negated the advantages of that breakthrough by lengthening decision time lines and making the human factor the main source of target-attack delays.

Many of these problems had to do with unusually restrictive rules of engagement (ROE), as well as with an insidious tendency toward centralised execution that was made possible by the unprecedented global connectivity that dominated the war.

For example, once the effort shifted from attacking pre-planned fixed targets to engaging emerging time sensitive targets, the ROE required at least one SOF team member on the ground to have eyes on the target before it could be struck. Any attack that might generate even a single non-combatant casualty had to be briefed first to CENTCOM and then reviewed personally by General Franks or even

higher. That demand made for time-consuming delays that often undermined the CAOC's effort.

*Some* complaints about these restrictions were entirely appropriate. Yet we need to honour and respect the main considerations that underlay these rules. The fact is that they came from the highest level and were anything but arbitrary. On the contrary, President Bush himself was personally determined to avoid anything that might even remotely suggest that the campaign was directed against the Afghan people or against Islam. That led to a *political* need for a minimally destructive air campaign.

In practice, however, the approach taken by CENTCOM sometimes led to a tendency on the part of CAOC staffers to be gun-shy in proposing targets out of an anticipatory fear of disapproval. That forced the Air Component Commander at the time, Lieutenant General Chuck Wald, almost every day during his six weeks in the job to remind his staff of what the campaign was ultimately about: 'We're here,' he told them, 'because of dead Americans.'

All the same, thanks to their overriding sensitivity to collateral damage and its potential costs, CENTCOM and the Pentagon and White House did themselves out of more than a few lucrative attack options due to the power which that sensitivity conferred on overly cautious implementers at lower levels. At times, things got to a point where mission accomplishment took a back seat to collateral damage avoidance—a new fact of life. That underscored a new dilemma pointed out to me later by General Chuck Horner, the air commander during the First Gulf War, when he agreed that collateral damage avoidance often indeed overrode mission accomplishment, but it was in a situation where mission accomplishment sometimes required collateral damage avoidance. I would just add to that that one of the downside predicaments of modern air power is that it has become a victim of its own success as a result of this ethical conundrum.

How did this discomfiting situation develop?

Well, for one thing, a big downside of the increased bandwidth availability and situation awareness that we saw in Operation *Enduring Freedom* was that at the same time they made possible more efficient operations than ever before, they also allowed senior leaders, really for the first time ever, to dabble personally in the finest details of force employment. In a situation where anyone could talk to anyone else in the chain of command, senior leaders exploited that situation to the hilt, not so much because they felt a legitimate need to, but simply because they *could*.

Another downside here was that 'reachback,' a good thing in and of itself when used sparingly and only as necessary, degenerated into what came to be called 'reach-forward' on a regular basis as rear-echelon commanders and staffs began

asking for information from the CAOC and then using that information to try to influence events from the rear.

Often the result was the constant hands-on involvement of too many layers of supervision and too many influential outside players. More than once, the practical consequence was bad guys in the crosshairs who got away.

I cannot rightly speak to air power's role in Operation *Enduring Freedom* without saying at least a few words about Operation *Anaconda*, which was a US Army-led operation toward the end of the war's first phase that almost ended in disaster until the air component came into the plan at the last minute. I addressed this botched operation in detail in my book and will just summarise the most essential points here.

In what turned out to be the only significant US conventional ground involvement during the first phase of Operation *Enduring Freedom*, the most case-hardened al Qaeda fighters—six or seven hundred, by the best count, although *Anaconda's* Army planners badly underestimated that number—took refuge in the eastern mountains of Afghanistan after the Taliban were routed. CENTCOM was afraid these hard-core holdouts would eventually pose a threat to the Karzai Government that had just been put into place. So General Franks cleared an agglomeration of troops called Combined and Joint Task Force (CJTF) Mountain, under the command of US Army Major General 'Buster' Hagenbeck, to go after those al Qaeda fighters in force.

To make a long story short here, CJTF Mountain was 'combined and joint' in name only. In fact, it was purely a US Army entity, and its leaders, from Hagenbeck on down, proceeded to plan for what would be the largest commitment of US ground troops to combat at any time since *Desert Storm* without the least attempt to enlist or even inform CENTCOM's air component.

Debate still goes on over the hot-button issue of whether the land component deliberately cut the CAOC out of the planning so the Army could have its chance to look good after an uninterrupted string of air power successes from *Desert Storm* through *Deliberate Force* and *Allied Force* in the Balkans during the 1990s.

I will not take sides in that debate here, since I could find no smoking-gun evidence of outright Army complicity in that regard. However, I *will* say with conviction that I personally found General Hagenbeck's public complaining afterwards (and I interviewed him) about the allegedly weak close air support he got from the Air Force, in particular, to have been both ill-founded and unseemly, to put it as politely as I can, since it was the air component's superb rallying and its real-time improvisation under stress once the fight was on that pulled *Anaconda's* fat out of the fire just in time before the operation went from bad to worse.

As it turned out, fixed-wing air, in the end, did *all* of the work that was originally planned for organic Army fires against al Qaeda's fighters. Had General

Hagenbeck been willing to slip the start of his operation by even just a week, General Moseley and the CAOC could have taken any number of anticipatory measures to ensure the fullest possible support of the air component from the very start. That might well have prevented at least some, if not all, of CENTCOM's troop losses to enemy fire before allied air power finally rolled in with full effectiveness.

Just to end on this subject, in commenting on an earlier draft of my book, my friend General Dave Deptula, who is also here in the audience, hit the nail on the head when he wrote that 'the message that needs to come out of this issue is that to optimize air-ground synergy, the air component must be included in all phases of planning surface operations and vice versa. That's what went awry in *Anaconda*, not CAS'. I will leave it at that.

I should mention too before concluding that the first round of Operation *Enduring Freedom* taught some valuable lessons that would bear directly on the more complex showdown with Saddam Hussein that would unfold a year later—and that we will hear more about from General Moseley, Air Chief Marshal Torpy, and Air Vice-Marshal Hupfeld in the next session.

On this, using the vernacular of American high school football, General Moseley once described Operation *Enduring Freedom* to me as the 'JV scrimmage' for Operation *Iraqi Freedom*.

Among the teachings from Operation *Enduring Freedom* that led to major pay-offs in Operation *Iraqi Freedom* were:

- A 20-fold increase in SOF involvement, with nearly 10 000 SOF troops from the US Services and allies engaged in harmonic interaction with allied air power
- And much closer integration of carrier air into the CAOC's Air Tasking Order (ATO) planning from day to day.

The war also spotlighted the need to bring Generals Franks and Moseley into at least the same the same time zone, if not collocated, for Operation *Iraqi Freedom*. During the first phase of Operation *Enduring Freedom*, General Franks was eight time zones away from the fight at CENTCOM's headquarters in Tampa, Florida, while General Moseley was forward in his CAOC in Saudi Arabia. The huge time difference made for some gargantuan inefficiencies that were finally done away with when both generals moved to their new forward headquarters in Qatar.

For its part, the absence of an Air Support Operations Center (ASOC) with General Hagenbeck's headquarters that almost occasioned a disaster in *Anaconda* was finally rectified for Iraq when a full-up ASOC was provided for the US Army's V Corps. At the same time, an able and respected Air Force fighter pilot who spoke Army fluently was provided as General Moseley's personal representative to

the land component when Major General Dan Leaf was picked to head up the Air Component Coordinating Element assigned to the land commander, Lieutenant General McKiernan.

In addition, thanks to Blue Force Tracker, coalition ground troops in Iraq were finally able to enjoy a real-time common operating picture that was so lacking during *Anaconda*, when allied units on the ground had no awareness of the presence of other friendly ground teams nearby, not only conventional units but also SOF and CIA teams.

Let me just wrap up here with one last windfall pay-off of Operation *Enduring Freedom* for Operation *Iraqi Freedom*. Thanks to the close trust relationship that eventually developed between Generals Franks and Moseley as the first phase of Operation *Enduring Freedom* was nearing its end, General Franks agreed to grant General Moseley the authority to approve virtually all target attacks, including attacks against emerging high-value targets. General Moseley later called that a 'quantum leap' over the more inefficient practice the year before, when CENTCOM or higher headquarters had to approve just about everything in Operation *Enduring Freedom*.

In all, as General Moseley later told me, the main takeaway of all of this for him personally was that 'you learn to fight by fighting'.

To conclude, despite the problems I mentioned before, the first phase of Operation *Enduring Freedom* was a resounding success. In just three months, CENTCOM toppled the Taliban and put al Qaeda in Afghanistan on the run. Beyond that, the campaign offered a 'battle lab' for testing some of the most significant air power developments to have appeared in more than two decades. Notable among these, as I said before, was that the campaign was a SOF-enabled air war, in which SOF teams made air power more effective than it would have been operating alone, and air power allowed SOF teams to succeed with indigenous opposition groups in land operations against the Taliban and al Qaeda.

However, as we know all too well today, 12 years later, our experience in Afghanistan ever since has been mostly frustrating and unfruitful. It is not my charter this morning to address that separate issue. However, I *will* say that what began as a limited and worthy effort to deal a death blow to al Qaeda in Afghanistan somehow became transformed over time into a very different American and NATO counterinsurgency war against resurgent Taliban forces, with a view toward nation-building and somehow installing democratic governance on totally inhospitable cultural terrain.

That transformation did not occur as a result of any great prior leadership deliberation in Washington. It just happened, with no national debate or even serious conversation about it along the way. Although once again I cannot point to any hard evidence that would stand up in a court of law, my sense is that the most

senior American civilian leaders over time allowed themselves to be persuaded by those in green uniforms most closely arrayed around them that a land-centric counterinsurgency war offered the key to a workable long-term solution for Afghanistan.

Whatever the explanation may be, that has been the reality for the last 12 years. That transformation has occasioned, as of today, more than 2000 Americans killed in ground combat in Afghanistan since 2002, with little to show for it and with still no clear end in sight.

Our current predicament also has brought us to a point where the United States may well leave Afghanistan by the end of this year without having negotiated a binding status of forces agreement with the Karzai Government that would allow for a residual American presence to keep the Taliban at bay, just as we did in Iraq in 2011 in a way we will surely come to regret.

With respect to this predicament, let me just share with you a view offered by former USAF Chief of Staff General Ron Fogleman, who commented in April 2012 that 'the American public's patience with this war is over. It was a dream that you could take an area of the world that wasn't a functioning country and turn it into a functioning country on the time lines required to satisfy the American public. It just wasn't going to happen.'

Right or wrong, I will leave you with that closing thought. It should remind us once again, harking back to John Warden's tutorial yesterday afternoon, about the importance of picking campaign goals that are actually attainable with the resources we are willing to commit and about avoiding the pernicious pitfalls of uncontrolled mission creep.

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## DISCUSSION

*Group Captain Guy Adams (RAAF – Air Force Headquarters):* You mentioned that this particular activity was the first use of armed remotely piloted aircraft and you talked about issues with rules of engagement, restrictive rules of engagement etc. Are you aware of any discussion associated with differences in rules of engagement or morality associated with the use of remotely piloted platforms to provide kinetic effect?

*Dr Lambeth:* General Deptula, who invented the term remotely piloted aircraft, has probably forgotten more about this subject than I will ever know. I would say first of all that the only difference between an RPA and an F-16 is that you don't have a human in the aircraft. Otherwise, the uses and constraints of the two kinds

of platform are pretty much the same. If I understand the question correctly, the same ROE that will apply to a fixed-wing aircraft will apply to an armed Predator as well. There is most definitely a human element in the loop to ensure that. So again, unless I'm misreading where you are going, I don't see any functional difference between the constraints that govern the use of kinetics off a manned platform and an RPA. Do you have a comment on that, Dave [Deptula]?

*Lieutenant General Dave Deptula (USAF Retd):* Ben is spot on, with the exception that there is actually *more* ethical oversight associated with the use of remotely piloted aircraft than there is with manned aircraft because you have the persistence and the number of people involved in overseeing operations. Ben talked about the collapse of the find-fix-finish equation to minutes; that can also be extended to whatever time it takes to ascertain the ethical implications of engaging a particular target. So, I would tell you that remotely piloted aircraft are more conducive to humanitarian use of weapons to accomplish a mission today than are manned aircraft or, for that matter, any other use of armed force at a distance.

*Dr Lambeth:* And this is something, by the way, that the media throughout much of the world really seem not to understand. You hear talk every day now in the United States about 'out of control drones—we've got drones up there doing their own thing!' They *don't* do their own thing. These things are under very tight discipline.

*Flight Lieutenant Stuart Arnold (RAAF – Headquarters Joint Operations Command):* Citing the Vietnam example of South Vietnam falling two years later, you say that we've had protracted mission creep. I would argue that, given the vacuum left when the Taliban were pushed up into the north-east, wouldn't they have always come back? Could you comment on that?

*Dr Lambeth:* Yes, they would have come back sooner or later and, in my personal opinion, that was not our problem; we can't be the 'policeman of the world.' They treat their people poorly. That is regrettable but we went into Afghanistan to begin with for one purpose, and one purpose only, and that was to eliminate a functioning al Qaeda infrastructure that had come to do harm to the United States and our allies. Once that was done, once that was successfully accomplished, my personal opinion is that that was the time to fall back and continue to monitor Afghanistan but not get into this very, very different and, by definition, totally problematic effort of trying to bring a market economy and Jeffersonian democracy to alien land. But we did that. To your specific question of had the Taliban come back, as they now have, and had they begun once again to provide haven for forces like al Qaeda that could do a repeat of 9/11, that would have been the appropriate time to go in and smack them down. But that is not the way the history played itself out. To my mind, looking at Afghanistan from where we

are today and henceforth, that ought to be the abiding American focus until this problem is solved, and that will be after all of us have gone.



# THE 2003 GULF WAR – UNITED STATES

## GENERAL T MICHAEL ‘BUZZ’ MOSELEY (RETD)

In a typical fighter pilot fashion, I did not bring slides and I did not bring movies or graphics. I just want to have a conversation with you about 2003, about being a Combined Force Air Component Commander (CFACC), about being a partner in a coalition, and about a transition from Afghanistan to Iraq, and about some observations. And as I look at the distinguished eminent speakers on the front row and the second row, I am not talking to these people really, because they have one foot in the nursing home by now. So any lessons are pretty much lost on them. I would really like to talk to you people that are on the staff, in staff positions and in the staff colleges, because you are the future of your country's air force, and the future of your country's 'thinking air force', and the future of your country's 'executing air force'.

I really treasure the opportunity to be here with you people. To the Royal Australian Air Force, thank you for inviting me and my colleagues to have a discussion with you about these topics that are incredibly important. The notion of warfare, the notion of conducting warfare and the notion of how to think about this is one of the primary driving force functions of your profession. There was a question over here about the morality of killing somebody from a UAV (unmanned aerial vehicle); I will come back to that in a minute. I really want to set the conditions for our discussions, and then for my two colleagues and partners to then perhaps address some questions.

When we talk about Air Force, we get a chance to go back a little bit in time and to close the loop on some things. My family is pure Air Force and, at least in my family, I think we all bleed blue. Inside the American Air Force—no different to anyone else's Air Force—there are several bloodlines and I have, in a very proud way, associated myself with the bloodline of Billy Mitchell. So, having said that, I am an unrepentant, unapologetic airman. I have little or no sympathy for those that critique the importance or the effectiveness or the decisiveness of air power, because I think at any point in time you can dispute those arguments. But I think also, it is incumbent upon us to fulfil the promise of the air weapon, and continue to understand that the modernisation, recapitalisation and the exploitation of technology is where we live—whether it is in space, whether it is in the atmosphere, whether it is manned or unmanned, or whether it is in the cyber domain.

Let me also begin with a bigger thought. We are into the year 2014, which is 100 years since the beginning of World War I. All of you who remember your Middle

School history lessons will recall that in 1913 and up until the spring of 1914 there was no academic that I can find or no newspaper or policy bloc or official that was saying anything other than that we live in an interconnected world, we live in a world that is interdependent, we are too sophisticated and we just live in a world that has grown beyond nation-state wars. Well, imagine the surprise by August–September of 1914 as we see what actually happened, and then from 1914 on until now.

In your profession, I would offer you a thought that when people say we are too interdependent, we are too connected, we are in some ways too sophisticated to fight, I almost would offer to you a bit of a scoff because it is not the way I believe the world is. I believe we live in a world that thrives on international trade, on interconnected economies, etc., but we also live in a world where conflict is not something that you can ignore.

Let us talk a little bit about the 2003 Iraq War. I want to start from the perspective of the CFACC and talk you through the notion of how a CFACC thinks about this, because out there in this crowd will be a CFACC, there will be officers that are involved in operational planning and execution, and strategic thinking and, whether it is in combat or humanitarian systems or disaster relief, it is the same.

My background is one of fighter aviation. I was blessed to be able to go to the Navy Weapons School and the Air Force Weapons School. I taught at the Air Force Weapons School, commanded the Air Force Weapons School, commanded the wing at Nellis Air Force Base, had a chance to atone for some sin that I do not remember by being forced into all of the professional military education in schools and, while my brothers were out flying, I was doing what you are doing, staying awake in a large auditorium with a lot of people talking. But also, it gave me the chance to think about the principles of leadership and the principles of those that have practised this art before, from Trenchard to Mitchell, and Colonel John Warden's book has been unbelievably helpful along the way. In fact, I issued that book to the staff of the Combined Air Operations Center (CAOC) as we started playing with this stuff.

There are guys like General Tom McInerney, who was a commander at Clark and Kadena, and who taught General David Deptula and I, and several others, lessons of how to think about bigger problems than just a four-ship formation of fighters. I worked off and on for a guy named 'Moody' Suter, who is the father of the American Air Force's *Red Flag* exercise. I had a chance to spend a lot of time with a guy named General Bob Dixon, who was Commander of Tactical Air Command during the inception of the *Red Flag* series, as well as others like General Horner and General Short to talk about the business of a CAOC and the business of planning and executing an air campaign.

In the world of a CAOC or in the world of a CFACC, you have several authorities. You are the single air and space *commander* of the theatre; not coordinator of the theatre, *commander* of the theatre. You are responsible for combat search and rescue, personal recovery, you are responsible as the commander of theatre air defence and you are the coordinator of airspace for the theatre, which means you write the rules and if others do not like it then you do not let them fly. I guess that is the easy way to look at that. You are the single interface between the airspace, and, to a certain extent, cyber activity to the combatant commander in that staff and back to your Service. And you are the prime orchestrator of the coalition partners and allies to ensure that they are represented at the highest possible level to facilitate the capabilities that they bring, and to orchestrate all of that 24 hours a day.

You always have the notion of roles and missions, discussions and you always have the notion of Service and frictional priorities but, in my experience, the further you get from Washington, the easier those things are to work. The closer you get to Washington, the harder those things are to work because people get frisky, they get testy, or they believe that they have a better idea than the person that is actually engaged.

When I transitioned through the command of Afghanistan and then to Iraq, one other thing that I convinced myself was, as I established this CAOC—the one in Al Udeid and the one at Prince Sultan Air Base—that I wanted a team from Air Force Studies and Analyses Agency in each CAOC and I wanted a team of Air Force historians in each CAOC. In every meeting that we would go to, as far as planning or execution of the daily briefs, I wanted the studies and analyses team and the historian team inside that process to capture all of the data. I told them, ‘There’ll be mistakes made. I’ll make mistakes, everybody will make mistakes. But I want you to capture everything that goes on during this period of combat, and then be able to correlate that and put that in a place where we can learn the next time we do this, so that the spin-up period is a lot easier.’

The backdrop to a lot of this is combat, and the backdrop to combat is the very uncomfortable reality that you are going to destroy things and you are going to take lives, and you just have to understand that. I do not believe that is a normal human endeavour, and I think in this profession of arms you have got to get your head around the notion that you are responsible for destruction and you are responsible for the taking of a life. And I will come to collateral damage in a little bit.

I would like to return now to the question about UAVs. I might have misunderstood the question because I am down here with all the folks that are in the nursing home, but I got a sense it was the notion of whether it is more immoral to kill somebody from a UAV than it is from something else. I would offer you a thought that whether you cut someone’s throat with a knife or you

put a 9-mm round behind their ear or you kill them with a 2000-pounder or a 50-megaton weapon, you are still taking a life. So the moral imperative is that you had better do that under the strictest sense of rules of engagement, and the strictest sense of understanding the morality of what you are involved in and the authorities that you have. I do not believe that it is any different to employ a weapon off an unmanned system than it is off a manned system, or from a special operator or an infantryman with a bayonet or an artillery round. We can discuss that or argue about it later, if you wish.

A CFACC has several full-time day jobs other than just the combat. You have a job which we in the US Air Force call 'Air Force Forces' (AFFOR), which is the care and feeding of everyone wearing an Air Force blue uniform—the personnel policies, the medical policies, the deployment policies, dwell time, etc. That is pretty much a full-time job in a theatre, to worry about every single airman; where he or she is, who is watching over them, who they work for and what they are doing.

Coalition maintenance and inclusion is also a pretty much a full-time job because every coalition partner has certain imperatives from their home government. They also have certain limitations, and to be fair you have to work through all of that. You have to be inclusive of all of that and never put one of your coalition partners in a position to violate what their home country believes is either a red line or a limit.

Next is theatre engagement. I spent a lot of time on the road with our host nations—United Arab Emirates, Kingdom of Saudi Arabia, Kuwait, Bahrain, Oman, Pakistan and others—including them as much as I could into the process, and explaining what was going on to ensure that they were comfortable. Theatre logistics and mobility is a 'big deal'. It is a big deal on fuel, on bombs and on food. Two of the biggest 'rebellions' that I had in the CAOC were when we ran out of salad-making material, because we had a snowstorm on the East Coast that caved in a warehouse at Dover and we could not get fresh salad, lettuce and tomatoes, and it was a pretty terrible thing for a while! The next minor crisis was when the omelette guy either got sick or left. I was faced with a major rebellion in the mess hall about the loss of the omelette man. But you are able to work through those if you take all that stuff seriously!

As I get into Operation *Enduring Freedom* and then the transition, I have a couple of preliminary thoughts I want to share with you. As we talk about this, I want you to consider over and over and over again that this warfighting business and command of a theatre, air and space campaign is all about people. It is about people that you are sending in harm's way, it is about people that are supporting that and it is about people that are executing the task and doing the planning. There is a human dimension to this; there is a human dimension to this at every level. So, as we begin to talk about *Enduring Freedom* and then into *Iraqi Freedom*,

keep in mind that this is all about how to train, how to organise and how to equip people to go in harm's way to execute a task against other people.

I was in the Pentagon that morning, September 11, when the airplane hit the building. General Wald and I were in our transition changeover for me to become Commander US Ninth Air Force and Central Command Air Forces (CENTAF), when a staff member came in and said, 'Looks like an airplane hit one of the towers in New York.' It was a beautiful clear day and I thought that seems strange, not sure what that is about. About 15 or 20 minutes later he came back in and said, 'An airliner has hit the second building; looks like the towers are going to collapse.' General Wald and I looked at each other and without hesitation and simultaneously said, 'Al Qaeda.' While we are in some bit of shock, I asked the Executive Officer, 'Turn the TV on so we can see what this is looking like,' and that is about when the airplane hit the Pentagon. There was smoke, fire, chaos, lots of nastiness, alarms. We were trying to figure out if we had everybody accounted for, to make sure we knew where every person within the authority was and to get them out. Then we got out on the outside through the river entrance and looked back at the Pentagon burning. It filled me with a sense of outrage and gave me a real sense of mission, knowing that I was going to go within about a week or 10 days and assume command of this thing against the people that just did this to New York and Washington.

Now, Afghanistan, we did not know much about it. One of the first things I told the staff was, 'Go get me a map of Afghanistan so I can start getting my arms around this thing.' The aide came back and said, 'Boss, we don't have any maps in the Pentagon map room of this place.' And I said, 'We've surely got big jet route maps?' and he goes, 'Yeah, we've got those, but those are JNs [Jet Navigation Charts]'—that is like you're looking for the moon. I said, 'We've got no maps?' and he replied, 'Boss, we've got no maps.' So I said, 'Okay, do this for me. Take my truck, go over to the National Geographic, and buy me a map of Afghanistan.' He came back about a couple of hours later with a National Geographic map of Afghanistan. I fought two and a half years, two and a half campaigns—Afghanistan, Iraq and Horn of Africa—with a National Geographic map, which is actually an excellent map, by the way.

Ben Lambeth mentioned this next aspect in his presentation. The distances were unbelievable. Our Navy was flying 600 miles from decks in the North Arabian Sea to target centroid Iraq—600 miles! The French Air Force Mirage 2000s were flying 600 miles from Bishkek, Kyrgyzstan, down to targets in Afghanistan. For the B-52s and B-1s from Diego Garcia, the distance to Afghanistan is about the same as that from Tampa, Florida, to Juneau in Alaska. Think about that.

When you look at launching off carrier decks, and operating from Bishkek over the Hindu Kush Mountains, and from Diego Garcia, or from airfields in Qatar and Kuwait, you begin to get the sense of distance, and it gives you an appreciation of

operations in the South-West Pacific in World War II, and about the notions of range and payload.

It was very apparent early on that collateral damage was not necessarily our friend. I spent a lot of time with the technicians and with the guys at Nellis to develop what we called 'Bugsplat', which was an algorithm to be able to overlay the ordinance effect onto a mensurated coordinate, and get a reasonable prediction of the blast effect of that weapon, either airburst, surface or subsurface burst. So, with that as a rudimentary tool, we were able to work our way through the notions of collateral damage in the urban areas of Kabul, Kandahar and Gardez, and these other areas. But as we got along, we perfected that a little bit more, and we got the real experts to build us a set of computer programs where you could input the coordinates—the elevation, the surrounding area with a photograph—and you could overlay the designated point of impact and overlay the weapon, and you could get with reasonable assurance the blast effect in the adjacent areas. And so we began to go after people in urban areas—which I had no hesitation to do, by the way—because either the 500 or the 1000-pounder or the 2000-pounder, depending on how you fuse it, is a reasonable urban weapon if you do it right. But collateral damage was something that was a consideration in every engagement to get it right.

So, what were the successes? I will just highlight a couple that Ben Lambeth did not mention; he has already mentioned the bombers, the fighters and the ISR (intelligence, surveillance and reconnaissance) mission. But one thing that was critical for me as we got ready for Iraq was the notion of combat search and rescue. We built, over time, the largest combat search and rescue elements within any CAOC or command structure in the world. My guidance to the staff was, 'Look, if we put somebody on the ground, there's going to be no POW camps when this is over. There's going to be no repatriated airmen returned to their loved ones when this is over. If you dismount from your flying machine and you are caught, it's not going to be a very pleasant experience!' My sense was that we had to be positioned and prepared to pick people up as fast as we possibly could, and we did that. We got better at it over time, and there was a great episode in Iraq that I will talk about later. But I think that the notion of combat search and rescue began to gel much more firmly in the Afghanistan campaign.

The other success that Ben Lambeth did not mention was the largest humanitarian airdrop in the history of combat aviation, when we flew the C-17s out of Ramstein to drop tons and tons and tons of 'meals ready-to-eat' and humanitarian things up in the north and western part of Afghanistan. The only trick in that—and it comes back to the human factor—is that after a while I asked, 'Do we have any feedback from our Afghan friends about menu items? Are there things that they like more than others?' The immediate feedback was, 'Boss, they really don't like the ham steaks!' I said, 'You guys have got to be kidding! I've

got a lot going on every day so this is my fault, I'll take the hit. But has anybody else in this entire command center realized that we're dropping ham steaks on a Muslim nation, and that perhaps they won't like, as we would say, the 'quality pork products' that we're delivering?' I said, 'How about we start going through these things and eliminating the ham steaks before we drop them?' The other menu item that they began to really cherish was peanut butter, which I did not see that coming either. I did not know there was an attraction to peanut butter in Afghanistan.

So, what about the failures? It took a while for us to get the rules of engagement (ROE) right. It took a while for us to get Central Command (CENTCOM) staff away from a 'no-fly zone execution model'. I lost most of my hair in that evolution because it was just so painful to try to get through the notion that we were fighting a theatre fight against a specific set of bad guys, but the limits on the execution were based on the notion of what worked in a no-fly zone. That is probably the biggest of the failings I would offer to you in the early part of Afghanistan, but we were able to turn it around.

We also had some interesting non-combatant Judge Advocate General (JAG) staff intrusions into the business. We had several JAG officers at CENTCOM headquarters who actually believed they knew more about the planning and execution of an air campaign than the people that actually do it. So we went through some of that, and we had one of them 'killed off' and the other one fairly marginalised. So that was a lesson learnt in dealing with JAGs.

Sir Glenn Torpy had the same sort of thing, but I will leave that up to him. I tried never to put the RAF or the RAAF in a position where they would have to deal in an adversarial relationship with their JAGs. I always felt if the JAG was going to be ugly, I could deal with that.

The UAV streaming video was another bit of pain that I did not see coming. I did not really understand that when you put TV screens on desks in Washington and you give people telephones and access to real-time video, it is like crack cocaine and they become addicted to it. They become so addicted to it that at times they feel okay with picking up the phone and calling you in the CAOC to ask you if you see what is showing on the screen.

To deal with that in what I think was a very, polite and gentlemanly way, I called in our communications guy, and General Deptula was in that room, and I said, 'Okay, I want everybody to leave except the three of us, and I want the JAG in here'—Ed Monahan, who should be a Supreme Court Justice, came in. I said, 'Ed, I want you to record this meeting and keep it in your files.' Then I asked the communications guy, 'At what point do all of our UAV feeds go through a central node and then go out on the lines that go back to Washington?' And he goes, 'Sir, that's easy, they all feed through Sigonella.' I said, 'Okay, at what point do we routinely take that

link down so we can do maintenance on that feed at Sigonella?’ He said, ‘Sir, we don’t normally do that.’ And I said, ‘Okay, how about this? How about, in about 30 minutes, you take that feed down, and let’s just see what happens.’ So he did, and of course the phones all started ringing, and then we knew we had it. So when we got to a point where we did not like people picking up the phone and interfering with us, with the 50 or 60 or 100 TV screens on people’s desks in Washington, we did ‘routine maintenance’ on the line at Sigonella.

The last piece of Afghanistan, which takes us to Iraq, is Operation *Anaconda*. I will not get into the details; Ben Lambeth has already done that. But I will tell you, from my perspective, I believe still today that it was a professional, ethical and moral failure of a couple of officers who set this thing up without complete integration and inclusion of the other components. I use those words very carefully, because in the profession of arms you do not do that to each other. It is not professional, it is not ethical, and the moral implication of this is that we got people killed because of either egos or Service egos or notions of authority. To me, that is outrageous on so many levels.

I will never forget the video teleconference (VTC) when this matter was being discussed for the first time, and General Franks asked me if I knew anything about it. I said, ‘No, I don’t know anything about this,’ and that was 24 hours away from execution. The weather came in, and we got a 48-hour slip, so we were able to do some things but there is an entire PhD dissertation there on how *not* to conduct an operation. I believe it really boiled down to some Service issues and some Service egos, and about perceptions of jointness versus realities of inclusion and components that do the fighting for a combatant commander.

The last thing about *Anaconda*, I was having a discussion with a crowd like this—I believe it was at Carlisle, at the US Army War College, which I felt was a very appropriate place to have this conversation about professional and moral and ethical failures—and an Army lieutenant colonel in the crowd during the question period raised his hand and said, ‘Sir, I’ve got a statement and then maybe a question,’ and I thought, ‘Okay, bring it on.’ He then said, ‘My name is Lieutenant Colonel So-and-so. I was the Battalion Commander on the ground during *Anaconda*.’ You actually got this right. The air component saved us from ourselves, because we didn’t have any of this thought through.’ And then in kind of a laughing way he said, ‘And oh, by the way, you killed 600 of the 150 people they told me were there.’ Think about that!

In December 2001, General Myers, who was the Chairman of Joint Chiefs of Staff, was one of the obligatory senior Washington guys coming through at Christmas and Thanksgiving in the theatre. We had been out to see the troops and we were walking back out to the aeroplane, and he said, ‘Buzz, let me talk to you a minute.’ So we walked over under the wing of the C-17. His wife, Mary Jo, got on the aeroplane; they were all ready to go. He put his arm around me and he said, ‘Do



you know much about this Iraqi thing?’ And I said, ‘What Iraqi thing? The no-fly zones, or the idiot Saddam Hussein, or the 12 years we’ve been here doing this? What part of it?’ And he said, ‘No, there’s some people in Washington thinking about it. We’re going to hit this place.’ I replied, ‘No, I don’t know anything about it.’ And he said, ‘I want you to start thinking about it.’

So they left and we went to dinner. As we were leaving dinner, the RAF liaison guy (the senior RAF officer in the CAOC) and I were just walking back together, having a chat. And I said to him, ‘I’m not sure what I know, and I’m not sure what I’m supposed to know or have the authority to tell you, but in Washington there are some people beginning to think about “doing” Iraq. And my handshake to you guys will always be that I will never hide anything or never withhold any information. I will not ask you to do anything with that or preclude you from doing anything with this conversation, but I’ll find out and I’ll tell you. My message to you is somewhere in Washington this discussion began in December 2001, about Iraq.’

By April or May, we were beginning a dialogue about how we were now going to do this. Sir Glenn Torpy had come back, Angus Houston had sent a couple of liaison guys from the RAAF, and we had some others. We then began to bat around this notion of what happens, and by April or May we pretty much had an idea. We had gone down the road of, should we give the air component another 30 days of preparation and then go with the land component, or how is this all going to play out? General Franks did not want to do that. General Franks did not want to have a 30-day air activity and then follow it with a land component move because, remember, we were told and I guess we honestly had convinced ourselves that we were going to be dealing with chemical and perhaps biological weapons. So, to go after the Iraqis with the air component while a land component sat in place for ‘x’ number of days, under a notion of Ababil and Al-Samoud missiles and long-range artillery with chemical and biological weapons was not an acceptable planning factor.

So my compromise to General Franks was, ‘I’m okay with all of that, but I have to be able to address the target set south of Baghdad.’ He said, ‘What do you want?’ I replied, ‘I want the authority to conduct the no-fly zones as they were originally written.’ He said, ‘Done,’ and I said, ‘Sir, you need to understand what you just told me I can do. What you’ve just said I can do is hit everything south of the 33rd. If we get lit by radar or if one 57-mm round goes off, we’re killing everything south of the 33rd!’ He replied, ‘Well that’s a little severe.’ I went on and said, ‘It won’t be my choice to fire the 57 mm, but it will be my choice to punish those who do. So if you’re not going to give us time to clean this stuff out, then give us the authority, under the existing, agreed-to rules of engagement of the no-fly zone, and I’ll execute.’

So from June 2002 until H-hour, we conducted a fairly aggressive campaign called *Southern Focus*. Every time we would get shot at by a 57 mm, which was a lot, or even radar-guided 85 mm or the mobile SAMs, we would respond with attacks on command and control bunkers, on fibre-optic cables and nodes, and on the gun pits themselves. By the time we got to H-hour, we did not need three days or four days or five days; everything south of Baghdad was pretty much gone.

The difference was, for all of you guys that flew in the Southern No-Fly Zone—the Northern No-Fly Zone was a little different—if you got shot at by a 57 mm, under the old rules, you had to leave, and then you had to get hold of the CAOC, who got hold of Tampa and asked for authority to go back and strike the gun pit, which they may or may not approve. But if they did give you authority, you could go back and strike the gun pit with one weapon. If you did not have a precision weapon on board, then the CEA (circular error average) of the weapon was normally outside the size of the gun pit. But that was not the problem, because in the 45 minutes it took to get the authority to strike the gun pit, the Iraqis would move. They got to be pretty good at moving SAMs and AAA inside the decision logic of us having to go to Tampa and come back. It was a bit of a rude surprise in June 2002 when we *immediately* dropped multiple weapons on the gun pits, which gave them no time to get out of the pit itself.

I think that most people who look at the Iraqi campaign perhaps have not focused on what *Southern Focus* really meant. What it really provided was an effect prior to H-hour.

I would now like to mention the planning focus and the scenarios; Sir Glenn Torpy and I have mused over this. We had scenarios that started with us stumbling into it, we had scenarios that started with a see-saw effort, we had a big start, we had a little start, we had a medium start, we had a timed start, we had scenarios with Turkey and without Turkey, with the Kingdom of Saudi Arabia and without the Kingdom, with limited bases, with limited airspace—we went through all of those and we ended up, I think, with the right mix. After all that planning, and the process to get to that, I think we ended up with the right mix.

There was a question a couple of days ago, I think, about UN resolutions and about violence and force. Remember, the UN voted that Saddam Hussein and the regime were in material breach of UN Security Council Resolutions 44 to 45 on a variety of topics *before* we started this thing. The UN had reached a point, and President Bush and others had reached the point of a coalition and, in fact, had given Saddam Hussein 48 hours to get out, which of course he did not. So I guess, in a kinetic way, we executed on the material breach of UN resolutions, and on 15 years of no-fly zone frustration.

The missions, which will sound familiar, were to gain and maintain air and space supremacy—actually, they used the term ‘superiority’ but I changed it to

‘supremacy’ and then later changed it to ‘dominance,’ because I think there is a big difference in air superiority, supremacy and dominance. If that does not sound consistent with everything that you have heard, then you actually were asleep during the lectures, because that is the number one job.

Then it was strategic attack, regime decapitation, neutralising the regime’s command and control, isolating the regime, and then working our way down through the other hierarchy—interdiction, kill box interdiction, close air support (CAS) etc. The support of the other components was a part of that also; support to the Maritime Component Commander, Vice Admiral Tim Keating, who was worried about a large salvo of mines; to the Special Operations component; and to the Land Component Commander, Lieutenant General David McKiernan. But those were not at the top of my assigned mission tasks. At the top of my assigned mission tasks was, in my words today, ‘air and space dominance’ and then regime attacks, strategic attack, decapitation, etc., and then the rest of that fell through.

General Franks now was beginning to have more confidence in his component commanders, which I think evolved over the Afghanistan experience. He actually moved to the theatre instead of being in Tampa, which was a continual frustration. To his credit, he said he stayed in Tampa because Washington was so oppressive on him that he had to be able to get back and forth to Washington, and he could not do that if he was in theatre. But when we spun up for the next theatre, he moved into theatre, so we were all in the same time zone.

I had a couple of key tasks. One from the President was about ballistic missiles—whether they were Scuds or whatever they were—and it was to preclude any attack on the Kingdom of Saudi Arabia, on Jordan, on any of the Gulf Cooperation Council (GCC) countries, or on the State of Israel. It was the only thing the President gave me as an assigned task; no ballistic missiles were to hit the GCC or Israel or the Kingdom.

So what were the challenges as we got into this? You are streamlining now for a major fight. You have come off the Afghanistan experience, and you are beginning to work your way through all of this other stuff. I believe the Afghan experience was a good scrimmage that got everybody kind of in line for Iraq. I had a serious theatre-wide force protection challenge about how to defend the airfields against not only chemical or biological attack, but against unconventional warfare forces, Special Operations Forces (SOF), outraged people, etc. So I had asked the Army Land Component Commander to fulfil his agreed-to task of defending my airfields, because in multiple memorandums between the Army and the Air Force the Army had always signed up to the commitment, ‘We will defend your airfields.’ David McKiernan, to his credit, said, ‘I don’t have the people to do that,’ and General Franks said, ‘Well, you’re going to do it, because you signed up for it.’ I said, ‘We’ll deal with this later.’

To overcome the problem, I effectively built an RAF Regiment-style, force protection element out of the security forces personnel to defend the airfields. We built and operated 51 airfields, so it was not a small operation on airfield security—at the peak we were operating 38 simultaneously. I had asked the RAF to help in building this force protection element and they sent guys over, we sent folks over, and we effectively in the Air Force built something that looks like the RAF Regiment, so we could defend our own damn airfields.

Let me now turn to the ‘what-ifs’. I asked the staff to come up with a list of the things that were going to be dislocating for us. These included the following:

- A salvo of all of the Iraqi Air Force at one time with mixed munitions; they had 400 aircraft.
- A salvo of Iraqi heavy commercial aircraft, full of fuel—as a victim of 9/11 in the building, I have got an idea of what that felt like.
- An early salvo of the Iraqi missile systems, with a mix of chemical, biological or conventional weapons. We did get shot at quite a lot with Ababil and Al-Samoud missiles, by the way, and Seersucker for a little bit but it only hit a Kuwaiti shopping centre.
- An early salvo of naval mines.
- The early destruction of the southern and northern oilfields.
- Attacks on the airfields.
- Attacks on leadership.
- The fuel trains.
- The climate.

With respect to the climate, I kept pushing President Bush pretty hard on this, saying, ‘If you are going to task us to do this, we need to do it before we get into April and May. If we get into April and May on this, you need to slip it until the fall because the climatic conditions will prevent the older tankers lifting the weight—the KC-135E can’t lift the weight under those temperatures. I need cooler weather and oh, by the way, walking around in Mk 4 “Condition Black” chemical gear is bad enough when it’s 40 degrees [4°C] outside; it’s pretty intolerable when it’s 120 degrees [49°C] outside.’

I also asked, ‘What are we going to do if these guys decide that they want to try some space business, and they go after the GPS systems with GPS jammers?’ So we practised all of this quite a bit out at Nellis, and we set up a GPS network out there. We went and bought, on the international market, state-of-the-art GPS jammers from a variety of other countries; we went to RadioShack and built our own GPS jammers, when we figured out that we could build one better. We

parked them all over the range out at Nellis and we drove around out there, and figured out a way to deal with this. In a quite elegant manner, when the GPS jammers came up, we actually killed them with a GPS weapon. I have always thought that was poetic justice to all of those people that believe you can jam the JDAM.

We had multiple simultaneous fights once we started this. The first fight was for air dominance, the second one was strategic attack, and then we went after the regime—the Scud missile business, interdiction, support of the SOF, time sensitive and time critical targets, kill box interdiction, close air support, air refuelling, mobility, and the ISR stuff—that goes on simultaneously. You do not get the opportunity as a CFACC to be able to do that in sequence; you have the chance for that to all happen at once, which is why the staff needs to be pretty squared away about the execution.

In the opening round of this, as you all know, we started off with a strike at Saddam Hussein and his sons at Dora Farms on the outskirts of Baghdad, which turned out to be incredibly bad intelligence. Washington got the intelligence for us, Washington transmitted the mission task, and the President on the phone with me ordered the execution of task. We put four 2000-pounders through the roof of the alleged bunker and we put 32 TLAMs (Tomahawk land attack missiles) on top of this thing and it turned out that there was no-one there. Washington never, ever came back and said, ‘Hey, we’re sorry’, which I thought was another fascinating twist.

The centre of gravity for this, in my view, was Saddam and the regime. I felt that if we could dislocate him and disconnect him and isolate him from any activities, and continue to do that, then the land component would have a lot more flexibility.

I also believed that, if I could get at the Republican Guard using the mass of capability from the US Navy, US Marine Corps, Royal Air Force, Royal Australian Air Force, and US Air Force, then we could probably hold our own against the six divisions of the Republican Guard. As it turned out, we pretty much rendered six divisions of the Republican Guard ‘combat non-effective’.

Of the Iraqi guys that we rounded up and interviewed, one of them was pretty emotional—I guess you would be if you have your country torn up. He told us that the Republican Guard’s divisions, all six, were essentially destroyed by air strikes. They were still 30 to 40 miles from their destinations, unengaged. We actually broke the Iraqi will outside Baghdad.

I think the notions of attacks on fielded forces and the notions of attacks on armour are changing. With the technology that you as airmen have now, this is not just about trying to put a 500-pounder onto a vehicle; you actually have the capability with the systems now to be able to do this whether it is in the middle

of a sandstorm or whether it is in clear air, daylight or dark. The sandstorm was another interesting feature. It was alleged by some that this would be an operational pause but, for the air component, we ratcheted up to over 1500 sorties a day during the sandstorm, focused on the Republican Guard guys, who thought they were able to hide inside the sand and inside the vegetation.

Let me get to the end of this, because there are some humorous things that happened too. The lights went out in Baghdad. General Franks called and said, 'Did you do that?' I said, 'No, I haven't done that. I wanted to do that, but I didn't do it.' And he said, 'Well, somebody turned the lights out.' And I said, 'Boss, it wasn't me. I didn't do it.' Well, the system was so fragile that it fell in on itself, as we now know.

Another really keen observation of the difference between the Afghan and the Iraqi campaigns was that the J3 of CENTCOM called one night in the middle of all of this and said, 'We're about to go into a brief with the President. CINC's here. When you get a chance, could you tell us what you're bombing?' Now think about that for a minute. In Afghanistan, you could not even drop a fuel tank without CENTCOM approval! Now we are in a major theatre fight, and they are about to go in and brief the President and the J3 says to me, 'When you get a chance, tell us what you're bombing.' Big difference, big difference!

I am not going to go through all the numbers; you guys have got all that. I will tell you the things that I believe that worked really well. I believe the integrated Joint Coalition Plan—planning, execution, inclusion—worked better than anything that I have been involved in, at least in 40 years. Part of that is because we have all known each other. We have grown up in our own squadrons together; there are US guys in Australian squadrons, and Australian guys in US squadrons—same for the RAF. With NATO training standards we are all on the same template; we all understand this, we exchange with each other, 'hostages' to each other's schools. So I believe that it was not a far-fetched notion to expect that we could get along.

I did have a little bit of an issue, but we were able to resolve that. Some of my Marine brothers still believed that they were going to conduct a completely separate air effort, because that is what they normally do doctrinally. We went through that a little bit and we got that worked out. The answer to that was, 'No. It's not going to happen that way. If you think it's going to happen that way, then the consequences are you won't be invited to the fight. So why don't we figure out a way to run all of your stuff through the CAOC, and you give me a big Marine liaison element, a MARLE, and let's do this the right way, so you can get more of the assets when you need them.' And so, that all worked out.

Maybe it is because I am a product of Nellis Air Force Base and the Weapons Center, but at every turn I brought teams of guys in from Nellis and from the RAF Weapons Centre, as a matter of fact, and had them review the plans, had them

review the overall game plan, the SPINS (special instructions) and the ROE, and then I asked them to tell us if there was anything missing. To the last group of about six or seven guys that did that, I said, 'Okay, go home, pack your bags, say hi to your wives and husbands, and come back because you bought into this, so now you're going to help us execute it.' And we used those people as tactical coordinators, but you also have a bomber guy, a cyber guy, a UAV guy, an intelligence guy, etc. So you have a set of tactical expertise there that is like a set of PhDs that can come into the CAOC and help you.

To finish, I will give you a couple of little vignettes that make sense to you when you think about the human aspect of this. The combat search and rescue business to me is very, very serious. I believe it is a moral imperative to go pick people up. It is a core mission for the US Air Force—personal recovery is kind of an add-on for everybody else—and, with the core competency of the 'Jolly Greens' and the pararescue jumpers (PJs), is something unique. We had a Navy F-14 operating in the southern part of Iraq with the Special Operations guys to do some special stuff. This aeroplane had an engine problem—blew the engine, actually—and was getting a little bit out of it, so the guys decided they were going to 'dismount' and jump out of it. The word came in to the Joint Search and Rescue Center (JSRC) and they launched two H-60 Jolly Greens north. We did not know anything about it yet, but we launched them north. As the first guy, the RIO (radar intercept operator), went up the rail, it triggered the emergency locator beacon, the satellite saw it, popped the data down (mensurated coordinates) to the JSRC who shot that digitally real-time to the lead PJ and to the 'Sandys' (A-10 helicopter escorts) that provided escort. The second guy then went up the rail and, by the time these two guys had hit the ground, everybody had the picture—mensurated coordinates, time, distance, where these guys are, PJs en route, authentication for the guys etc. That was pretty much done all digitally, all automatically; and the guys were on the ground an hour, maybe less than that, I forget. There are a lot of guys in here that were actually in the CAOC when that was going on.

The other thing is a human factor. We pushed pretty hard into Baghdad; we pushed the close air support up and we pushed the sensors up, and SAMs were still being shot everywhere. And, by the way, our Army guys moved the fire support coordination line beyond the Iraqi SAM sites, which in the middle of the night I did not know about, nor did the Land Component Commander. We woke up the next morning to find that the Iraqi SAMs were *inside* our own fire support coordination lines. So we had to fight the SAMs inside our own battlespace, and we ended up losing a Navy F/A-18 because a Patriot fired through this and hit the aircraft and killed the pilot. I will come to the RAF loss here in just a minute.

We pushed the A-10s up into Baghdad and the F-16s up into Baghdad, and we had an A-10 shot down; it was just riddled this A-10. The pilot jumped out of it, in the middle of the fight. Now the challenge of flying true close air support is the

realisation that if you get shot down and float down, you are going to float down in the midst of the people you have just been gunning, and it is likely not going to be a warm reception for you. So this is what happened. He floated down into the middle of an Iraqi armour unit that he had been working over. He got down, got his stuff off and jumped down into a dyke, and he was running down inside this dyke and the Iraqis were trying to get him—it was like a scene from the movie, *The Bridges at Toko-Ri*, if you have ever seen that, where the guy is down in a ditch and people are after him. Anyway, this pilot was in the water back up against the ditch, and up on the dyke above him he heard a piece of armour coming—clank, clank, clank, clank, clank. And he was thinking, ‘Man, I’ve got a 9 mm. I’ve got 13 rounds. I’ll be able to do okay for a little bit here.’ The guys were talking back and forth to him, and the tank kept coming—clank, clank, clank, clank, clank—and it stopped right above him. The guy heard the hatches open, and out of the hatch he heard this voice: ‘Hey, Air Force dude, come on out. We’re the good guys!’ It was an Army M1A2 tank that had pushed the Iraqis back.

A lot of things worked well and I think that is a tribute to all the folks in the coalition and the other things that were around with that. But there were a few the things that worked less well, which I will talk about to finish.

We still had problems with battlespace deconfliction. Pushing the fire support coordination line beyond the SAMs is not a good thing. We had problems with air defence and the Patriot missile system. We lost an RAF aircraft and the two crew because a battery commander believed she was being fired on by antiradiation missiles, which got me a little aggravated. And I said, ‘I want to see the Intel brief that she was given that says the Iraqis have antiradiation missiles.’ Of course, they did not, and they still do not. So I said, ‘What possible motivation do you have to fire on something that you don’t know what it is?’

Now, in the case of the Patriot killing the F/A-18, those Patriots were working for the Army commander, but in the case of the Patriot firing on the RAF aeroplane, they worked for me. So I had the authority then to investigate. My problem was that the training for those Patriot crews and the intelligence discussion for those Patriot crews were an ‘F’, at best. The Iraqis did not have antiradiation missiles and they did not have a means to deliver them, even if they had them. So the notion of a battery commander that says I have got seven seconds to make a decision on whether I am being fired on by an antiradiation missile, I am not buying that. I did not like that and we have gone through several iterations on that.

Real-time battle damage assessment (BDA) is always a problem. Finding the bad guys – and this is the last thing that I will share with you. We were looking for Saddam Hussein and his sons and the other bad guys. We got to be pretty cagey. We found him in a restaurant in Baghdad through an ELINT cut, a SIGINT cut, and a HUMINT cut. We vectored a B-1 over at high speed, because the B-1 had been doing close air support, it had been doing interdiction and kill



box interdiction, and now we vectored the B-1 over to do decapitation, strategic attack—all on one aeroplane, all on one mission, on one day. Think about that for a minute.

So we got eyes on the restaurant and we pulled up with the B-1. We did the 'Bugsplat' collateral damage mitigation calculation, and figured out that if we set the weapons for surface or subsurface burst, we would just collapse the restaurant down and we would be okay. So we put two 2000-pounders through the roof; it blew the bottom out, collapsed it down and whacked all the people in there, who were all regime guys; except Saddam had left about two minutes before that. That is another example of closing the sensor to shooter loop, and being able quickly to respond to those inputs.

I think that is where I should stop so we can get to the other stuff. Let me quickly finish by saying that to be a CFACC you should be an unapologetic airman, you should understand air and space power, you should understand how to employ it and you should understand how to be a good partner, but you should never apologise for being an airman and bringing to the theatre the weight to bear from an air component. Afghanistan gave us a chance to figure out a lot of this and work it out, Iraq gave us the chance to execute that, and the coalition made this a much stronger effort.



# THE 2003 GULF WAR – UNITED KINGDOM

## AIR CHIEF MARSHAL SIR GLENN TORPY (RETD)

I was not quite sure what General Moseley was going to talk about, to be quite honest, but I have a few slides that I will go through. Some of it General Moseley has covered, but there are points I would like to draw out because I think, in some respects, he has underplayed some of the complexity which he had to deal with as the Combined Force Air Component Commander (CFACC).



**Figure 1: Preparing for a video conference**  
(Left to right: Group Captain Brown, General Franks,  
Lieutenant General Moseley, Air Vice-Marshal Torpy)

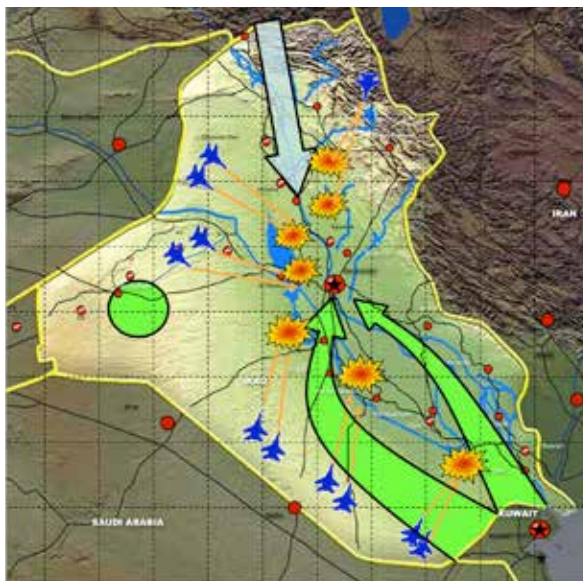
I put this opening slide up (Figure 1) not to show how good we looked 11 years ago, but because General Moseley mentioned inclusivity. The four of us sitting around that table were preparing for a video conference with the White House—with President Bush and the National Security Council—on the occasion where the President was going to give General Franks the authority to proceed with Operation *Iraqi Freedom*. General Moseley did not have to invite myself and Geoff Brown into that video conference—but he did. That to me was a prime example of being an inclusive coalition partner and leader.

What I want to talk about in the next 20 minutes is my perspective of the operation and the lessons I learned as a junior coalition partner.

General Moseley has talked about some of the planning. From an RAF perspective, we started the first formal planning in the summer of 2002, and this gradually escalated as time progressed. We immediately put a liaison team into Shaw Air Force Base, led by one of my one-stars. The team had a balanced mix of people with the right skills to properly participate in the whole planning process.

As many of you will be aware, our Prime Minister, Tony Blair, had a tricky task in maintaining political support for this operation. To a degree that constrained how much detailed planning we were able to expose in case it compromised the political process that was being managed in Whitehall. As a result, force packages that we had been negotiating with General Moseley and his team were not announced formally until January 2003. You will all be aware that the operation eventually commenced in March 2003, which meant that the timescales for preparing and deploying the UK force were compressed significantly.

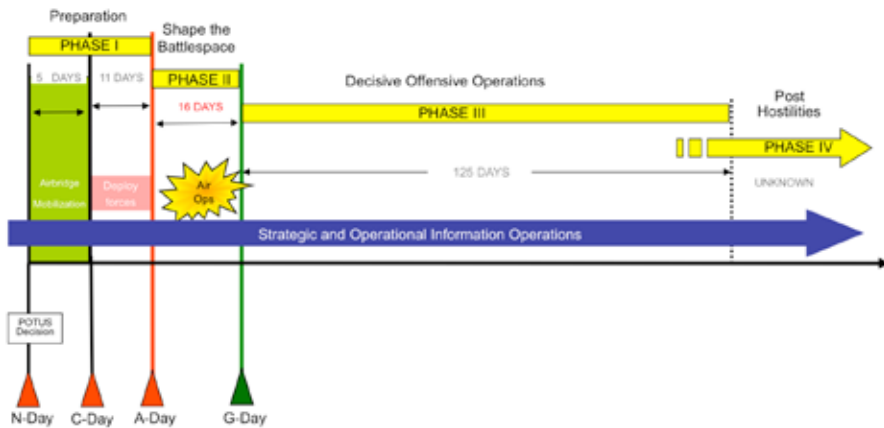
Figure 2 illustrates the broad campaign plan. The prime reason I show this slide is to highlight the northern axis. The original base plan was for a UK division to advance from Turkey to fix the Republican Guard divisions to the north of Baghdad. When that did not materialise, General Moseley had to accommodate the UK force structure in the south. This clearly required a major replan very close to the start of the operation.



**Figure 2: The campaign plan**

General Moseley has already discussed the planning time line. Those of us who were involved with the First Gulf War will recall the 100 days of air operations that shaped the battlespace for the subsequent ground offensive. General Franks did not want to replicate this campaign strategy. He believed that a truly joint campaign, that integrated the capabilities of the air, maritime, land and Special Forces components, stood the greatest chance of defeating the regime as swiftly as possible.

Figure 3 depicts the planning time line. The operation was designed in the four phases shown, with Phase II, shaping the battlespace, of particular interest to the air component. I will come back to this shortly because it brings out one of the points that General Moseley mentioned, which is the transition from operations in the no-fly zone into combat operations, and the complexity of transitioning from one set of rules of engagement (ROE) to another. It also highlights the possibility that the legal basis under which individual nations conduct operations might vary.



**Figure 3: Planning time line**

The force structure that the UK put together was developed with General Moseley's staff. Our aim was to deliver RAF capabilities that we jointly felt would bring maximum benefit to the coalition. The focus was on capability rather than numbers. As shown in Figure 4, we eventually committed a force of just over 8000 people and 112 fixed-wing aircraft, together with a helicopter component of some 27 aircraft.



**Figure 4: RAF force structure**

So what were the capabilities that General Moseley was really interested in gaining? Precision attack was always going to be a vital capability and our Harriers and Tornados were ideally suited to fulfilling this role. We also contributed 14 Tornado F3 air defence aircraft to the campaign. One of the things that many people tend to forget was General Moseley's commitment to the US under Operation *Noble Eagle* for the air defence of the continental United States. As a result, the number of US air defence aircraft available to conduct the operation in Iraq was limited—hence the value of the Tornado F3s.

The availability of tankers was probably the greatest constraining factor on the conduct of the air campaign. We contributed 13 tankers—40 per cent of the offload from those aircraft went to the US Marine Corps and the US Navy.

The provision of air command and control (C2) was a critical success factor but in short supply. Four UK E-3Ds were committed to the operation and manned one of the three orbits over Iraq for the whole of the operation; they took responsibility for the Western Desert operation. These two examples demonstrate the paucity of certain key enabling assets. Sometimes people outside the US seem to think that the US has an endless cupboard of resources to be thrown at an operation; this is not the case. The US has a range of global commitments and despite careful prioritisation the scale of Operation *Iraqi Freedom* highlighted our reliance on key capabilities and the high demand on these low-density assets.

It was exactly the same with intelligence, surveillance and reconnaissance (ISR) assets. As a result, the UK contributed six of our Nimrods, some of which were configured for the SIGINT role whilst others were maritime patrol aircraft reconfigured for over-land operations. Over the years the RAF had invested heavily in maintaining a tactical reconnaissance capability on our fast-jet aircraft and this proved invaluable in supporting the overall ISR collection effort. The venerable old Canberra was also pressed into action, and delivered an excellent strategic intelligence gathering capability.

In addition, and as already been mentioned, we deployed four RAF Regiment field squadrons and a Rapier squadron to provide force protection of some of our bases.

The initial task that I faced was establishing the UK's Air Contingent Headquarters at Prince Sultan Air Base in Saudi Arabia. Without a robust C2 capability we would not be able to manage either the inflow of UK assets into theatre or ensure that our forces were used as effectively as possible as part of the overall campaign. Part of this task was establishing eight deployed operating bases (DOBs) across seven different countries around the Middle East; I will come back later to the way that General Moseley facilitated us gaining access to these various bases.

I would now like to turn to some of the factors that influenced the deployment phase. Firstly, the Turkish dimension. It was not until very late in the deployment phase that we really knew whether we would be able to use Turkish bases or not. Also, as the political process unfolded, we had to manage host nation sensitivities about the types of assets that nations were willing to host; there was particular sensitivity over the basing of offensive assets.

The availability of our own sea and airlift was another significant consideration (Table 1). At the same time as we were trying to deploy the air component, the UK land component was being deployed to Kuwait. This, together with the compressed timescales, presented a considerable challenge for the logistic planners. The scale of the deployment was huge. I will not bore you with the details but it is worth highlighting the enormous benefit we derived from investing in deployment capabilities such as roll-on/roll-off military ferries and C-17s. Despite this investment, we still relied enormously on an uptake of civil, sea and airlift to get the whole force into theatre.

Sea
<ul style="list-style-type: none"><li>• 61 Charter Ships</li><li>• 5 Roll-on Roll-off Ships</li><li>• 85 Miles of Vehicles</li><li>• 5345 ISO Containers</li></ul>
Air
<ul style="list-style-type: none"><li>• 670 Flights<ul style="list-style-type: none"><li>- 424 Military</li><li>- 246 Civil Charter</li></ul></li><li>• 36 000 Passengers</li><li>• 29 500 Tonnes of Freight</li></ul>

Table 1: Deployment – Sea and airlift

Figure 5 shows the initial bed-down locations for Operation *Telic*, the codename under which all of the United Kingdom’s military operations in Iraq were conducted from 2003 to 2011.

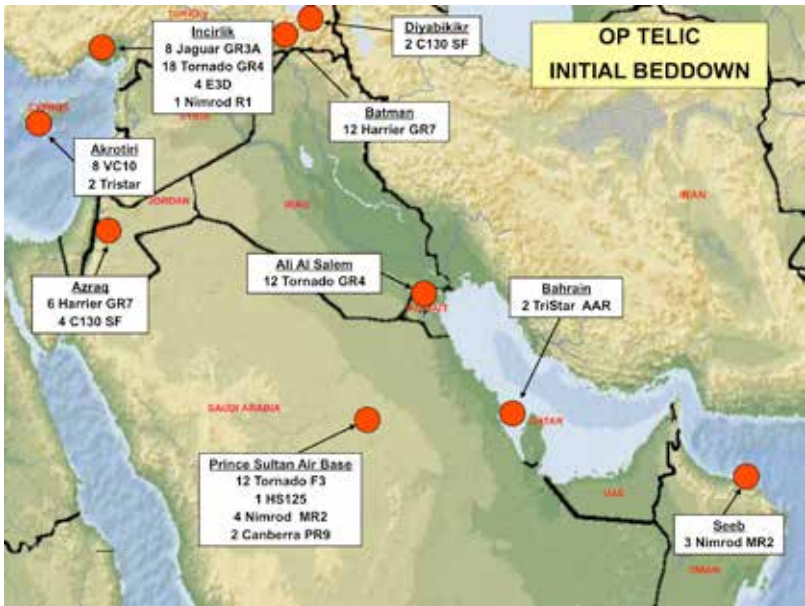


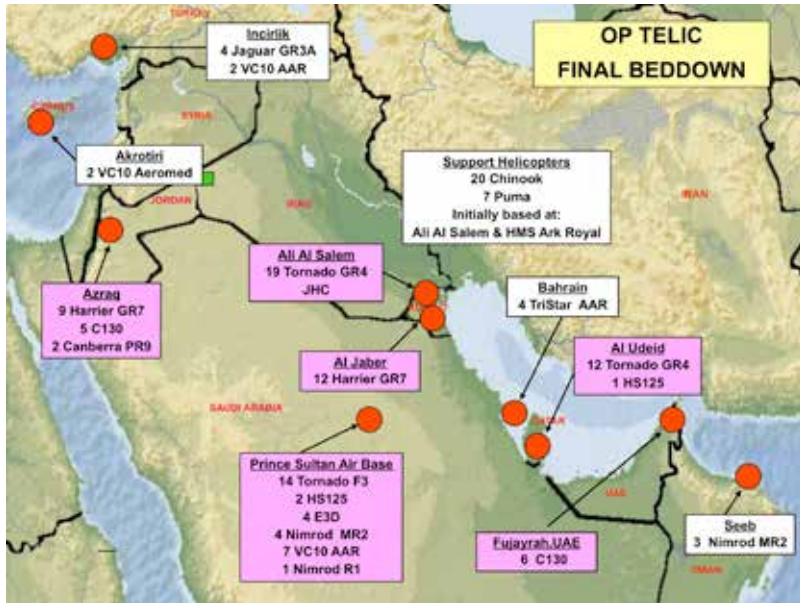
Figure 5: Operation *Telic* – initial bed-down

As you can see, a significant number of assets were initially planned to be based in Turkey to support the UK division. When the Turkish dimension clarified and we knew that this was not going to be an option, we had to shift the whole emphasis to the south. The UK division was then given responsibility for what later became known as Multi-National Division (South-East) (MND(SE)), the focus of which



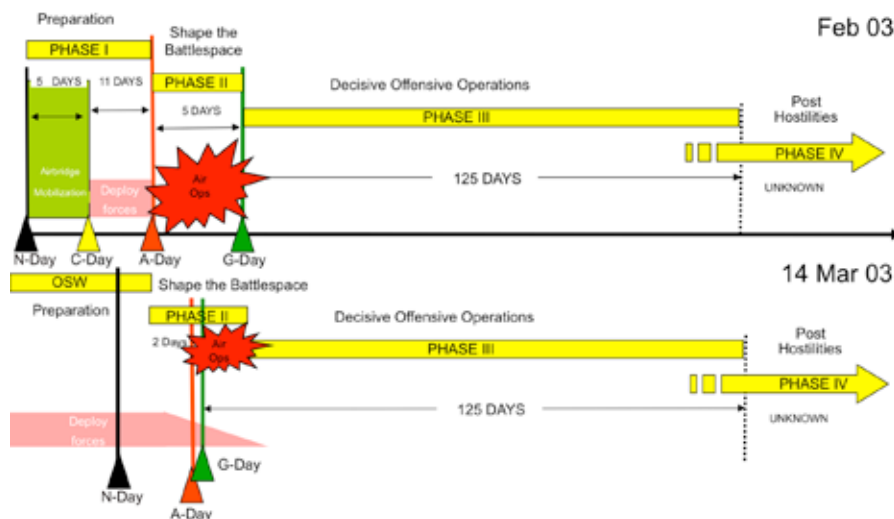
was the area around Basra. This had significant implications for General Moseley, not least in facilitating a radically different bed-down of air assets in the south.

Figure 6 shows the final bed-down locations for Operation *Telic*. The Harriers were inserted into Al Jaber. We put the bulk of the Tornados into Ali Al Salem in Kuwait, and another squadron's worth of Tornados into Al Udeid. A bunch of assets were put into Prince Sultan Air Base.



**Figure 6: Operation *Telic* – final bed-down**

At the same time as we were deploying, the time lines were getting even more compressed on the campaign plan (Figure 7); I think General Moseley modestly underplayed the significance of this compression. In February, Phase II had been reduced to five days and the air component was facing concurrent tasks and potential resource issues. By 14 March, the time had been compressed still further—Phase II was reduced to only two days because of concerns about securing the southern oilfields and the vulnerability of the land component in Kuwait. This led to consideration of how to maximise the effect of Operation *Southern Watch* sorties in order to shape the battlespace to, effectively, ‘de-risk’ the air campaign plan.



**Figure 7: Revised time lines**

This consideration highlighted one of the pinch points between the US and the UK. Although we were both operating in the no-fly zones under the same United Nations Security Council Resolution (UNSCR), the legal basis for our ROE was subtly different. As a result, the UK was sometimes not able to be as forward leaning as the US during this phase of the operation.

I can give you a graphic example of this. General Moseley wanted to fly some B-52s in the no-fly zones to send a psychological message to the regime, with a hope that it might lead to a negotiated settlement rather than conflict. No weapons were to be dropped, it was simply to send a message to the Iraqi regime. Our Government disagreed and vetoed the use of the B-52s. They were able to do this because the B-52s were operating out of Diego Garcia, which is sovereign UK territory. Now, my view was that General Moseley's judgement was absolutely right. But at the same time as these operations were being considering there was a significant amount of political activity in play and it was felt that such a step change in military activity might adversely affect the political and diplomatic efforts.

I want to talk now about some of the key lessons. Everything I saw confirmed the collective and individual training that we had been undertaking for many years, much of it under a NATO banner. People can be disparaging about NATO but the one thing it delivered was standardisation of equipment and our training outputs. In addition, we had been flying with the US for 12 years in the no-fly zones. Many of us had grown up together, from being young fighter pilots to rather more mature colonels! That brought a level of trust and shared understanding that is probably unique to the RAF and USAF. Our shared experience of operations in

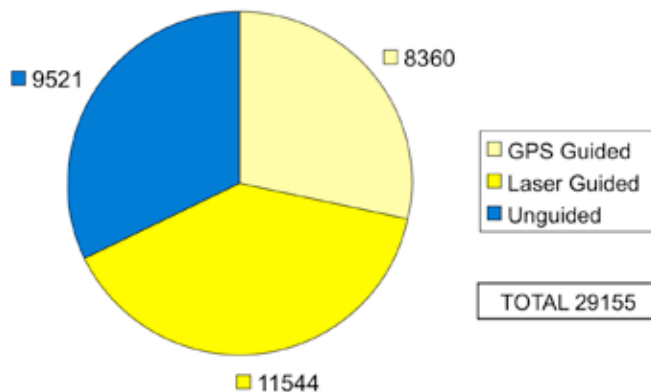
the no-fly zones also meant that we were very comfortable with the procedures and CONOPS that were proposed for Operation *Iraqi Freedom*. Our personnel were also very familiar with rapid deployments and operations in hostile climatic conditions with minimum support.

Our deployment capability in the UK had improved markedly, not just in terms of C-17s and roll-on/roll-off ferries, but our ability to deploy quickly. The procedures we used had improved markedly over the years.

The coherence of our front line was, I think, one of our great strengths, but is a concern for the future as financial and economic pressures force governments to trim defence funding. In the past we have managed to maintain virtually all the capabilities necessary to undertake operations on a national basis, although we recognise that many operations will be undertaken in some sort of coalition. As funding decreases this ability will be put under increasing strain.

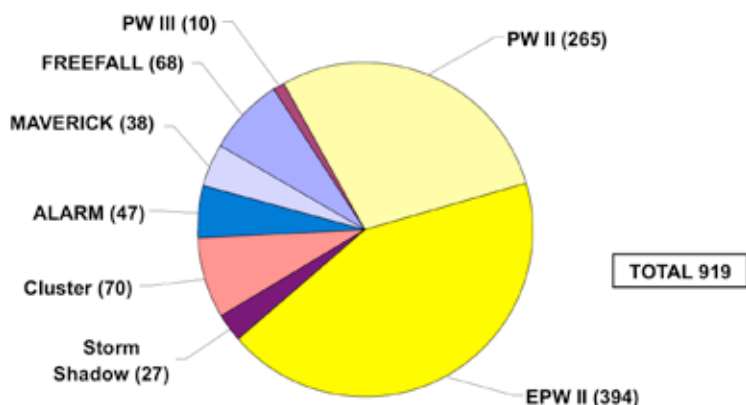
In terms of trends, this operation emphasised the inexorable move towards increased precision and persistence to improve effectiveness and minimise collateral damage and casualties. This was a lesson from Kosovo, where we did not have the precision capability that we needed to prosecute operations 24 hours a day in all weathers. Since then, we have made some very significant improvements to our force structure and weapons.

Figures 8 and 9 provide details on weapon usage. In his presentation, Ben Lambeth mentioned that nine per cent of weapons in the First Gulf War were precision guided. This increased to between 30 and 40 percent in the Kosovo campaign. The Second Gulf War was very much a precision campaign. Nearly 30 000 weapons were dropped, with some 70 per cent of these being either GPS or laser guided, and you can see the breakdown in Figure 8.



**Figure 8: Precision vs non-precision weapons**

Figure 9 provides a breakdown of UK weapon usage. Of the weapons we dropped during the Second Gulf War, about 85 per cent were precision guided. The large percentage of EPW (Enhanced Paveway) weapons reflects the performance and utility of this new weapon.



**Figure 9: UK weapon usage**

We had some notable firsts, in particular Storm Shadow. It was the first use of these weapons, which were employed against some of the hard targets on the first couple of days and nights of the campaign. They were a phenomenal success, given that they had never been used before this campaign. When we got the BDA (battle damage assessment) back from the first attacks, we thought we had lost some of the missiles because there was only one impact hole in some of the targets. It was only following detailed on-the-ground analysis after the campaign that we discovered that the second missile had gone down the first hole. So Storm Shadow has been a phenomenal success for the RAF.

Continuing with the key lessons, the UK's networked capability was poor. The only aircraft which had Link 16 were our F3 Tornados. None of our offensive aircraft had Link 16. Our communications were not as robust as they should have been. On many occasions we were not able to communicate on the same net as US assets. I rate this as one of the top lessons from the operation.

The campaign underlined the value of multi-role platforms—when basing and resources are constrained you need aircraft that can undertake different roles, sometimes on the same sortie. We had to deploy four different types of fast jets to Iraq. That involved a greater burden on the host nation, greater logistic support, and it did not provide the flexibility we would ideally have liked. This will be solved as we move ahead. By 2020 the RAF's fast-jet frontline will consist of just

two types, Typhoon and F-35, which will reduce the logistic support burden and improve flexibility.

We were not as good at air-land coordination and training as we should have been. Although a lot was learnt from our experience in Kosovo—and a range of improvements had been put in place—we had not progressed as far as I would have liked.

I saw my role as the UK component commander as making sure that we used our assets as effectively as possible, that everything was undertaken within UK political intent, that it was conducted as safely as possible, taking account of the combat environment, that it was legal, and we did it with minimum friction to the coalition. I will come back to that shortly.

I would now like to talk about a few of the coalition challenges. Overall, I think the coalition worked superbly—and much of that I put down to General Moseley's leadership. There were some enormous strengths but there were also some real challenges:

- Reconciling National Objectives
  - Burden sharing (capability, risk)
- Command and Control
  - Framework, partners
  - Linkages
  - Decision making (who, how long)
  - Trust
  - Practice – mission rehearsal

Although it would be nice to think that coalition partners will have common objectives, the reality of life means that there are always likely to be difficulties reconciling national objectives. This is a fact of life that somehow needs to be accommodated. How can you contribute to the coalition with maximum effect? The UK had always taken a view that we wanted to be involved on Day One of any campaign. This is driven by a belief that a willingness to share the political and military risk associated with Day One operations is likely to bring greater influence over the planning and conduct of the operation. But having the capabilities to participate in Day One operations comes at a cost, and that is not easy to sustain, particularly as defence spending comes under increasing strain. As for command and control, all of the points listed above hold true. Figure 10 shows the command and control diagram for the Second Gulf War. This is what we set up—we basically mirrored the US system. In the UK, the Ministry of Defence (MoD) and our Permanent Joint Headquarters (PJHQ) had very regular contact with the Pentagon and Headquarters CENTCOM. In the US we had a senior British military adviser sitting alongside Commander-in-Chief CENTCOM. We also had a liaison officer in the Pentagon, so we felt we were well connected

with key decision makers. Then for every US component in theatre we had an equivalent UK component commander. That gave us the visibility and knowledge of how things were going to be conducted. Overall, the C2 structure worked very effectively, and we were accepted by the US with open arms.

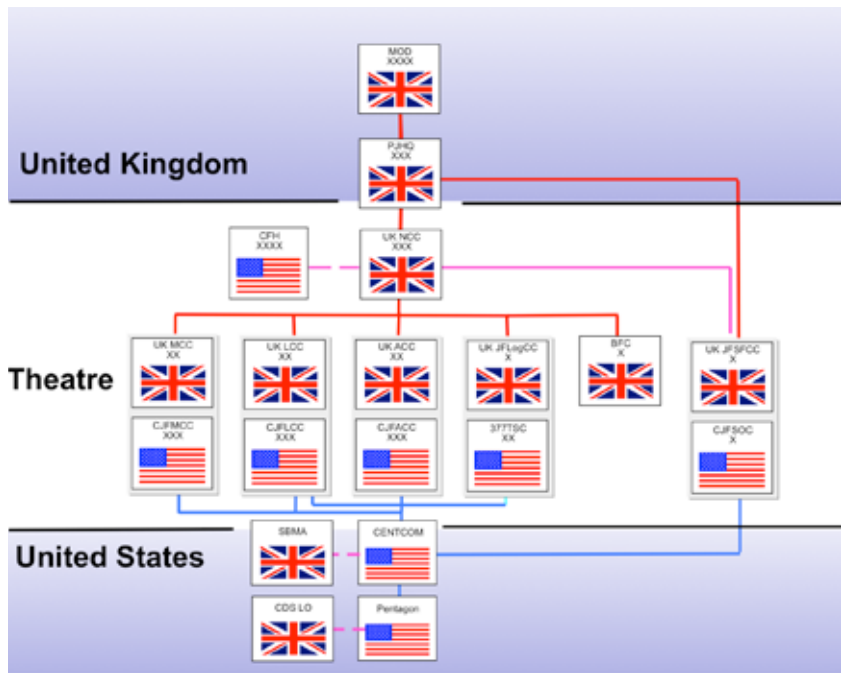


Figure 10: Command and control diagram

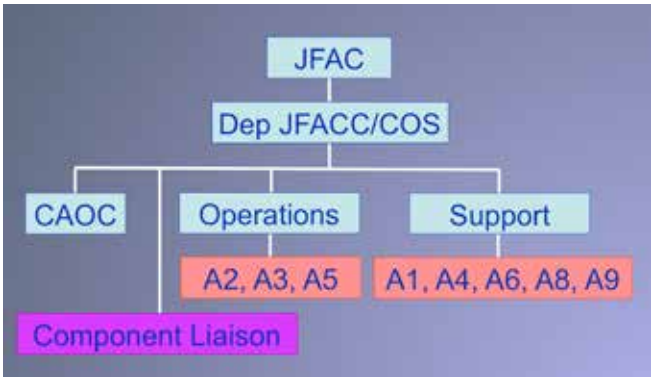


Figure 11: Joint Force Air Component Headquarters

Figure 11 shows the structure for the Joint Force Air Component Headquarters at Prince Sultan Air Base. The main role of the headquarters was to manage the UK air component to ensure it contributed as effectively as possible to the operation. The whole headquarters was about 250 strong, 50 of which were embedded in the Combined Air Operations Center (CAOC). My one-star deputy was also one of the three CAOC Directors. It sometimes surprised the folk in the Pentagon when they rang at the dead of night to get a British voice at the end of the phone. Their immediate response would be, 'Can you hand me over to the guys running the war?' He would reply, 'I'm running the war!' Although a rather trivial point, it highlights the strength of our relationship with the USAF and the trust General Moseley had in my people.

On planning, involvement and visibility are essential, and a major part of that is having a really good liaison team. One of the things that General Moseley did not mention was the difficulty of synchronising the planning activities of the different components in order to achieve a genuinely joint plan. This is tricky and needs to be a focus for senior commanders

Deployment planning: I will not major on this but it is worth mentioning the significant role that General Moseley played in negotiating with the various nations to secure basing. Because of his relationship with key Air Chiefs in the region he was able to secure approvals that might not have been possible through national means. Where negotiations were undertaken on a bilateral basis, good communication between General Moseley and myself was essential to avoid crossed wires.

On interoperability, I think our doctrine and procedures are good. General Moseley went out of his way to release as much intelligence as he could, not just to the 'Four-Eyes' community but to the other coalition partners. As already mentioned, the UK's communications and information systems were not as robust and comprehensive as I would have wished. General Moseley went out of his way to give us access to SIPRNET (Secret Internet Protocol Router Network), which was key to our people operating effectively in the CAOC.

Rules of engagement (ROE), targeting and time sensitive targeting: General Moseley mentioned some of the problems he faced with US officials back in Washington wanting to interfere in targeting decisions. We had learned a huge amount in the UK from our operations in the Balkans and in the no-fly zones. The pace of these operations meant that targeting approvals could be held in London. However, from the outset of planning for *Iraqi Freedom* it was realised that targeting approvals would have to be delegated further down the command chain. As a result, the UK's in-theatre 3-star Joint Commander and myself were given clearly stated levels of targeting approval. This enabled timely targeting decisions to be made, sometimes ahead of the US system. This was a significant step forward and is a lesson that must not be forgotten for future operations.

An area that requires much more work is ISR fusion, BDA and measures of effectiveness. Today, we are able to 'hoover up' immense amounts of information, and improvements in sensor technology will only increase this capability. The challenge we face, however, is making sense of this huge amount of data so that it informs the campaign plan as it unfolds. We still have a long way to go to achieving this effectively.

Information operations and the media are intimately connected. Information operations are designed to influence the enemy; whilst our media campaign is focused on maintaining support back at home and within the coalition. I would suggest that you are treading on dangerous ground if you do not tell the truth to the media—they have an uncanny ability to find out! That is not the case with information operations. The trick is effectively coordinating the two activities. Coordinating the media message between coalition partners is key, particularly with fast-moving events across different time zones. As an example, the press wake up five hours earlier in London than they do in Washington. Therefore, anything said in London tends to set the agenda in Washington. Understanding the need for coordination and having the means to deliver a joined-up media campaign is a vital.

Legal and political: General Moseley has mentioned some of the challenges we have collectively faced in educating military lawyers on the demands of targeting and ROE decisions. I believe we now have a generation of lawyers who understand that the starting point for any targeting discussion should not be, 'You can't attack that target' but, 'I will facilitate you being able to attack that target and I'll keep you out of jail as well'.

My final point is that it is all about relationships. In this particular case it is all about the relationship between the USAF, the RAF and the RAAF, but the same is true for any coalition. You have to strive to resolve the interoperability issues. Training and exercising is important; the more you can do, the more you 'de-risk' the problem.

But undertaking realistic training is going to be increasingly challenging in the future, particularly with some of the advanced capabilities entering service and the increasing complexity of future operations. I therefore think we must make more use of the synthetic environment.

Understanding where the pinch points are likely to arise is also vital. With the best will in the world there will always be areas of potential disagreement in coalition warfare, the trick is identifying them early, getting the issues on the table and finding the best possible solutions.

Lastly, the success of any relationship depends on good communication. It is all about talking to people, understanding their concerns and making sure they understand what is in your mind. This is not just a job for the seniors; it should be



embedded in the whole command structure, from top to bottom. Being involved in Operation *Iraqi Freedom* was a fascinating professional experience and it was a great privilege to work with General Moseley, who is one of the most inclusive coalition commanders I have ever had the pleasure to know.



# THE 2003 GULF WAR – AUSTRALIA

## AIR VICE-MARSHAL MEL HUPFELD

I was planning to have a bit of a canter through the Australian contribution in the 2003 Gulf War but, given our time limitations, it will now be a sprint. I will begin by highlighting that on 14 February 2003 we first put fighter aircraft rubber on the runway in the Middle East Area of Operations—for those romantics among you, that was Valentine's Day—and that was the start of about a four-month deployment, which was the first commitment of RAAF air combat capability into major combat in over 40 years. My view is that this was a significant defining moment for our Air Force to have done that, with all the reasons that General Moseley just explained in that modern environment of warfare and the way we do it now in the specifics of this particular conflict.

What I will do now is to cover about three of the key points, bottom line up-front, of those things that struck home to me. I would state clearly that I am speaking to these through the lens of a commanding officer at the tactical level of that conflict where I gazed a long way upward to the operational, even strategic, levels and a little bit less distance down to the people that worked for me.

The first point I will address is about command and control. Everything that has already been said on this, I echo. But, particularly of interest to Australia was then Group Captain Geoff Brown sitting at that table of four people—a pretty impressive statement and recognition of his competency at the time and recognised now in his position as Chief of Air Force—and of what we had been able to do in terms of working up for and being able and prepared to operate at that level of warfare with Group Captain Brown taking on that task. And I note that that command and control opportunity then continued. Since then, in over a decade of war, we have had a Combined Air Operations Center (CAOC) Director in the CAOC every year since that time, and other members of our Air Force in various roles embedded and employed as liaison officers in the command and control system, understanding the air battle process that was being conducted and has been talked about today. That is my first point.

I will talk about our contribution very quickly in a moment and I will highlight that it was a very modest commitment in terms of the materiel that we put forward for the deployment for this operation. But the point about it, which is the greater part of our contribution, is that we had a willingness to deploy that contribution from a military perspective and, indeed, we also demonstrated the capability to employ it in a credible manner. I think that is an important point.

Finally, a point on relationships; I think both the previous speakers have highlighted their significance, and that is what drives home my views as well. It is certainly about relationships amongst commanders, but it goes down to all levels of the commitment and to the players that we have involved, including exchange officers that make our contribution seamless and allow us to be interoperable with those players with whom we engage.

One final point that I wanted to raise is that very shortly after we landed there we also had the success of beating the English in soccer, the world game. The Australian team beat the English 3–1. Of course, that created that terrific friendly rivalry that we have with the British, and it allowed us to even firm up that engagement opportunity. I thought that, before the rugby union season starts, I would just throw that one in there.



**Figure 1: RAAF deployment locations**

Figure 1 shows the deployment locations for the various RAAF elements. I will not go through those specifically but, as I said, it was a modest contribution. What I would highlight is that, with 14 F/A-18 Hornets in theatre, we took 24 pilots. And I would compare that to the numbers that we put into the CAOC. We almost had more people in the CAOC than we put in the fighter aircraft that we were operating. And a couple of those people are in the audience today. I would note and comment that when I worked for the Combined Force Air Component Commander (CFACC) over there as the CAOC Director, one of the things that he said to me was, 'If it doesn't hurt you to put people in the command and

control system, then you've probably picked the wrong people'. Certainly for our contribution to what we called Operation *Falconer*, or *Iraqi Freedom*, that is exactly what we did. We picked our best to go into that CAOC and they got little from it other than thanks. They did not get any of the glamour; they did not get any of that professional reward that we all seek when operating aeroplanes and thinking, 'Are we good enough? If we are called on to do our job as crews in combat, will we be up to it?' They did not get that challenge but they came to a far greater good and had a far greater requirement to deliver and come to grips with all those elements that General Moseley and Sir Glenn Torpy have spoken about that delivered the opportunity for us to contribute to the operation.

I will just talk quickly about the C-130 aircraft. We deployed two C-130Hs and one C-130J. Obviously, they provided intra-theatre lift, but what is probably little known is that our C-130s also operated in the western desert supporting our Special Forces who were operating out there on Scud hunts. They did low-level resupply airdrops to those Special Forces throughout the western desert campaign. They were there and resupplied our Special Forces as they came in and captured the Al Asad Air Base to the west of Baghdad. Indeed, one of our C-130s was the first coalition aircraft to land at Al Asad after it was captured to support our Special Forces. So those C-130 crews were on operations for years; this was not their first operation, but it was one where they certainly demonstrated their capabilities.

I will turn now to our P-3 aircraft. Sir Glenn Torpy spoke about some of the RAF maritime patrol aircraft being reconfigured to operate over land. Well, our P-3s also expanded their role. They predominantly started out in the North Arabian Gulf doing maritime surveillance to support the interdiction mission there. But they also transitioned into an overland ISR (intelligence, surveillance and reconnaissance) role, and that role continued for another decade while they supported operations then into Afghanistan. As you can see on the top left of Figure 4, they accrued over 20 000 operational hours in that time; a very impressive contribution.

A few words on our F/A-18 Hornets. We flew over 2000 hours in the operation; that was five times the normal rate of effort that we would normally do in peacetime. We flew 12 to 14 sorties a day on an Air Tasking Order (ATO) of over 3000 lines—once again, a modest contribution.

Although the Hornet is a pretty small aeroplane, when you look at its capabilities, the multi-role aspect of it was what was attractive. We put our Hornets on a combat air patrol (CAP)—on the central CAP just south of Baghdad. It was a long way from our base to get there. Our mission lengths ranged from 7½ to 9½ hours. Fourteen aeroplanes to provide that CAP for eight hours a day; that was our task. If you look at the force generator just for that one CAP, when I flew the first mission into Iraq and came back and landed after 7½ hours in the aeroplane,

my flight line was empty. Fourteen aeroplanes were pushed forward. The key point about it though was that laser-guided bomb (LGB) we carried under the wing, that we could use while flying CAP. We were able then to be called up for time sensitive targeting if required from that primary mission. I also note that, from where we were based, it took us a lot of fuel to get to the CAP. So it was a challenge and required a commitment from the US to provide us the refuelling to get those aeroplanes into their operating airspace.

Compared to the F-15s that were on our base, the F/A-18 does everything about half—it goes half as far, it carries half the weapon load, and I wished it only used half the fuel, but it does not quite do that. So that was a fair commitment for the US to use our contribution, and use it meaningfully, and that was a demonstration of the relationship between Australia and the US in that regard.

The other thing I want you to note is the refuelling tanker that we used—the ‘Iron Maiden.’ I think that was General Moseley’s payback. I was offered the opportunity for our guys to get competent on that tanker before the war kicked off. My Executive Officer at the time said, ‘Sir, don’t do it. If you do that, that’s the only tanker we’ll ever get.’ I said, ‘Well, I tell you what, I know we’re going to be short of fuel and there’ll be shortages of tankers. If I get out there and I don’t have a tanker, I want to be able to get back. So we are going to go and get current on that tanker.’ And sure enough, that is almost the only tanker we ever got, although we did have the TriStar and the VC10s from the UK a few times as well.

Finally, there are a lot of lessons that could be learned or have been learned. I will not go into the details on those but I would emphasise that the only time you learn a lesson is when you change your behaviour and I think there is still a bit more for us to do in that regard. The lessons that we learned from that particular operation have extended through to our command and control environment at the moment. Some of those lessons we would like to see spread across our joint colleagues. And as we move forward in this future endeavour, it is important that we continue to aim to get these things right.

Finally, I also would note that, even if we learn those lessons, we have to be able to learn them in the context of the event in which we were participating. So, in the particular circumstances of Operation *Iraqi Freedom* and Operation *Falconer*, we learn our lessons in that context. If we can do that correctly, then we can take those lessons forward and apply them to the future and I think that is the vitally important ingredient of everything that we do if we want to make it worthwhile.

# THE 2003 GULF WAR – PANEL DISCUSSION

GENERAL T MICHAEL ‘BUZZ’ MOSELEY (RETD)

AIR CHIEF MARSHAL SIR GLENN TORPY (RETD)

AIR VICE-MARSHAL MEL HUPFELD

*Mr Rick Morgan (Boeing Company):* A question for General Moseley. I refer to the ‘shock and awe’ night when you bombed Baghdad. Sitting in my home in Virginia, it almost seemed like a sporting event the way the media portrayed it. What were your goals that night and did you achieve them?

*General Moseley:* First off, ‘shock and awe’ was not my term. In fact, I rejected that and did not want that used. Remember, it was an author that wrote an article about what he thought it should look like. So the term, I didn’t particularly like that. But to your question, about a day or so before that strike Washington took 30 targets off the list. At the time, we were not happy with that. All of us ‘wire brushed’ General Franks a little bit about taking the targets off, and I had a chance to deal with Secretary Rumsfeld before we executed that night. So, no, I was not satisfied with that. The 30 targets would have been a much, much harder punch at the regime and the supporting infrastructure of the Ba’athist Party, effectively down to the municipal level, as well as the Ministry of Defence and their intell operations. Those 30 targets would have been a seriously more significant punch on the first night. So no, I think that could have been done better. But also remember, the first night we dropped *the* eight Iraqi operating fighter airfields, with simultaneous drops off B-2s and F-117s and cratered the airfields to an extent that you couldn’t even taxi an airplane.

A group of us had done some mission air analysis on the airfields as to the extent of where the caliche hard surface began when the concrete pavement ended. So we knew that there was a set of opportunities on each airfield, if you put a 2000-pounder in it and subsurface bursted it, you would build a crater bigger than this stage area here. And so we did that on all eight airfields with simultaneous drops. So within about a minute, all eight of the primary Iraqi fighter airfields were out of the game. Then on top of that, which gets back to the rest of your question, we had a cell of intell operations guys at Langley that watched the airfields 24 hours a day. So when the Iraqis, the first morning, came out to try to do rapid runway repair on one of the craters, we put a 2000-pounder in the middle of their effort on that particular crater. They’re pretty quick; they learned pretty fast that we were serious about the airfields. We only had to re-attack I think one or two more DMPs [designated mean points of impact].

But the first night was specifically a counter air strike to get air dominance, and the first shot at the regime—the first shot at the regime targets and the regime supporting infrastructure. I think it did okay. I *know* it did okay against the airfields; I think it did okay against the dislocation of the regime leadership but it was not as big as I wanted it to be up-front. I think that came to bear later when Ambassador Bremer disbanded the Ba’athist Party, the Ministry of Interior and the Iraqi Army. We should have kept those 30 targets on the first night strike, because we would have gotten rid of a lot of the people in the facilities that then later came back to haunt the coalition after the disbanding of the Army. That’s a long answer, but yes on the airfields, not so much on the regime targets.

*Group Captain David ‘Doc’ Millar (RAAF – Department of Defence, Strategic Policy Division):* Sirs, a question regarding interoperability. We are very good and I’m certainly very proud of the abilities of our three nations in our TTPs [tactics, techniques and procedures], our warfighting and now our C2 [command and control] to work together, but there were some issues with the logistic support—perhaps Air Vice-Marshal Hupfeld would remember—with operating a Navy aircraft on an Air Force base. As we go into joint strike fighter looking to the future, where we are determined, absolutely bound, by our logistics chains and interoperability of the back end, are there any lessons we should take forward from the other parts of interoperability beyond TTPs and being able to fight together?

*Air Vice-Marshal Hupfeld:* Absolutely, ‘Doc’, and I’d actually comment that the logistics issues that we had were largely of our own doing in terms of planning. It’s one of the points that I didn’t raise in my presentation, but that was one of the significant lessons that we had. We’d had many years of cutting the tail to support the teeth, and that just wasn’t in the materiel elements of logistics, it was also in the doctrine. So this, this operation drove home to us that we needed to be serious about logistics. The other thing I’ll take out of this, which I think will come to partly answer your question, is that with the US Navy and the US Marine Corps operating F-18s in the same AO [area of operations], even though they weren’t on our base, we had the links within theatre. We had the intra-theatre lift and the opportunity through not just the air component command and control and leadership, but also in the links with the other components to be able to get capabilities that we needed to support our platform, and vice versa. We assisted the Marine Corps, we assisted Navy, and we provided a whole bunch of cross-logistics benefits that were a very strong definition of coalition. Now that approach, that philosophy, is what we are already planning and talking about in terms of the F-35. That isn’t just about the three members sitting at this table, that’s about those members that will be looking at operating that particular airframe, and within the region. So I think it’s an important point for us; it’s a lesson that we certainly have taken very, very strongly as something that we’ll take forward.



*Air Commodore Glen Steed (RAAF Retd):* My question is to General Moseley. General, I'd like to ask you a bit more of a personal question about your personal space during the campaign. About seven or so years ago, when I was in uniform, I had an opportunity with a colleague of mine to attend a joint training course in the US—you'll have to excuse me, I can't recall the full details but it was in Norfolk, Virginia, at the joint training centre. It was just the JFACC [Joint Force Air Component Commander] component of one of the 12-month courses you have for promotions to general rank and so forth. One aspect of the course intrigued us. The course was run by retired four-star generals from all four Services. As they went through the JFACC planning and so forth, I had the pleasure of being in one syndicate with a retired general; I can't recall his name but he said he was the mentor for General Franks during *Iraqi Freedom*. I think it was a friendly term of 'greybeard' they used and it intrigued us that the US would use retired generals to almost coach combat commanders, to give them that little bit of space, their personal space, afterwards to go back at night and say, 'Well, how do you think I went?' My question to you, did you have the opportunity as a component commander to have that mentoring? And if you didn't, what's your view on the use of them and the opportunity, as we all talk about the loneliness of command, to have this privilege to bounce your ideas off in a quiet space?

*General Moseley:* General Franks did have a guy. He might have called himself a senior mentor, but I don't believe in General Franks' mind it was a notion of having a supervisor. I think in General Franks' mind it was a notion of having a guy that he trusted, that he could rely on him to assist him if he was missing anything. I wouldn't view that as having an old retired guy hanging around to kind of be your mentor. I did not have that, nor did I want that, nor would I want that. We have several courses—we all do—that you can go to, or that you are sent to, that help you think through these problems, that help you kind of prepare for that. But at the end of the day, it goes back to what you've heard several times. You learn to fight by fighting. You learn to fight by invading North Africa and finding out how many things don't work. You learn to fight by being willing to accept risk, because one of the things that you hold the most dear in your entire life are the crews that you're about to send into combat, and you know that there's a high probability that you're not going to get them all back. So that's a very personal thing, I believe.

I didn't want, or think that I wanted, somebody there to mentor us or help us. I figured the three of us—Glenn [Torpy], Geoff [Brown] and I—would be able to figure this out. I figured the relationships that we had were close enough that, if one of us was doing something that could be done better, we felt secure enough in our relationships that we could share that.

I did get a call though. We do have the CFACC [Combined Force Air Component Commander] course that used to be held down in Florida; I don't know if it still

is. After the Afghan campaign, after the planning and the triggering of the Iraqi campaign, and about two weeks or so into the Iraqi campaign, I did get a call from one of those senior mentors. His message was friendly, but basically he said, 'You know, when you get a chance we would like to get you back to Florida so we can give you an update and we can help you on how to be a CFACC'. And I was polite. I said, 'I'm a little busy right now actually *being* a CFACC, and so thank you for that offer'. Again, I think another lesson to be learned for officers is, be careful what suggestions you make to people because they may grow up and be your boss. So that whole effort of those mentors in that CFACC course took a whole different route after I became the Chief.

But your point is well taken. General Franks did have a guy that he liked and was there to kind of help him think through things. But, but my impression was that I didn't want that. I used Glenn and Geoff, the three of us, as senior airmen in that CAOC [Combined Air Operations Center]. That's how I wanted to be critiqued or how I wanted to be open. I didn't feel I wanted anybody outside of our world.

*Air Chief Marshal Torpy:* The only thing I would add to that is having a staff which you trust to make sure that, if you come up with a 'barking' idea, somebody will say, 'Boss, that's a barking idea'. But, in all seriousness, it's creating an environment where junior people, in a respectful manner, will challenge a senior and say, 'Actually, have you quite got that right?'

*General Moseley:* Actually I welcome that. Which is why, in my case, I brought those selective teams of six or seven or eight young men and women from Nellis into the CAOC at various times to review the plans; also, not just from Nellis, but from Fallon and from Yuma with the Navy and Marine Corps, and from the Air Warfare Centre with the RAF. I brought those guys in, these are captains and majors, handed them the entire ATO [Air Tasking Order] and said, 'You guys go away for a couple of days, come back and tell us what we're missing'. I was more comfortable with having 'brain surgeons' at that level being a part of the process and being fully open, that if we've got something really stupid here or we've got something that could be done better, I want to know about it. An 80 or an 85-year-old guy may or may not be the person to do that for you.

# FRIENDS AND ALLIES: A CENTURY OF ENDURING PARTNERSHIPS

AIR CHIEF MARSHAL SIR ANDREW PULFORD

Honoured guests, fellow air chiefs, ladies, gentlemen, friends and allies, I feel privileged to have been given some time with you today to offer my views on partnerships as we celebrate this important centenary. The historical theme of this conference gives us all an opportunity to reflect upon the past and share ways we might take our respective air forces forward. I assumed command of the Royal Air Force (RAF) in July last year with UK military operations continuing in Afghanistan, at a time of fiscal challenge and in a world characterised by turbulence and change. However, change is nothing new to air power practitioners. For example, in the four years of World War I, the speed, reach and flexibility of flying machines saw them transformed from an eccentric adjunct to military organisations into indispensable machines executing all of the roles of air power that we recognise today: Control of the Air, Intelligence and Situational Awareness, Attack and even elements of Air Mobility.<sup>1</sup> Operating in the new third dimension with an entirely different perspective required a new type of warrior to explore the boundaries of human endeavour. The fledgling Services required technologically minded men of vision, servicemen and civilian alike, who were able to design, fly, maintain and support aircraft. It was frequently by exchanging ideas, training and fighting side-by-side that friends and allies would go on to progress military air power throughout the century. Thus, our forebears were able to turn times of great complexity and change, such as those we currently experience, to their advantage. Today, I shall examine some of our past, shared experiences and highlight some areas of air power which are ripe for development and further mutual cooperation.

## INTERDEPENDENCE AND AUSTRALIA

Australian military aviation was born out of the 1911 Imperial Conference which encouraged the establishment of military flying across the British Empire. Four squadrons from the Australian Flying Corps (AFC), served with distinction in

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1 Ministry of Defence, Joint Doctrine Publication (JDP) 0-30, *UK Air and Space Doctrine*, Development, Concepts and Doctrine Centre, Shrivenham, July 2013, p. 3-1. As an example of air mobility, No 3 Squadron AFC carried out an airdrop of ammunition to American troops of the 27th Division on 27 September 1918.

the Middle East and Europe during World War I, often operating under British command. Harry Cobby would be the AFC's highest scoring ace with 29 kills and the AFC would claim a further 527 enemy kills.<sup>2</sup> The career of the first airman recipient of the Victoria Cross (VC), Air Vice-Marshal Frank McNamara, highlights just how entwined the air forces of our countries were. In addition to serving on Australian units operating alongside the British, he also flew at the Central Flying School, Upavon and then served on No 22 Squadron, Royal Flying Corps in Egypt. After joining the Royal Australian Air Force, he spent two years on exchange with the RAF flying with No 5 Flying Training School in the 1920s. In 1943 he was appointed Air Officer Commanding British Forces Aden for two years. He ended his service as the Royal Australian Air Force representative at the Ministry of Defence.<sup>3</sup> His career reflected over 30 years of close British and Australian cooperation. In addition to the VC he was also awarded two of the highest state honours, the Commander of the Order of the British Empire (CBE) and the Companion of the Order of Bath (CB), recognising the value both of his and Australia's contribution in the formative years of aviation.<sup>4</sup>

### COMMON CULTURE AND AIRMAN'S PERSPECTIVE

It was the public outcry at the Gotha bombing raids on London that provided sufficient political impetus to establish the RAF as the world's first independent air force on 1 April 1918. In addition to defending London, the RAF would soon demonstrate the value of independent action by engaging in long-range bombing campaigns. WA Robinson of the Air Ministry noted the need for cooperation with allies in 1918. He said in a letter to the Secretary to the War Cabinet that 'these long distance bombing operations will, in the near future, partake more of an international character'.<sup>5</sup> Bombing missions of over 300 miles attacking targets such as Frankfurt and Stuttgart required detailed deconfliction and support from the French. The then Major General Trenchard reported that 'I take this opportunity of mentioning that the Independent [Air] Force was operating throughout in the zone of the group of the French Armies of the East under the command of General de Castelnau, to whom I am indebted for the very valuable

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2 Michael Molkentin, *Fire in the Sky: The Australian Flying Corps in the First World War*, Allen & Unwin, Sydney, 2010, p. 337.

3 McNamara felt somewhat embittered by his dismissal from the Royal Australian Air Force at the end of the war to make way for younger officers. He refused to have his VC returned to Australia on his death. This should not detract from his achievements and the fact that his career was so intertwined with the RFC/RAF.

4 Australian War Memorial, 'People profiles: Air Vice Marshal Francis Hubert (Frank) McNamara', viewed 8 February 2014, <<http://www.awm.gov.au/people/258.asp>>.

5 Letter from WA Robinson, Air Ministry, to the Secretary War Cabinet dated 13 May 1918, transcribed in *Air Power Review*, Special Edition, Spring 2013, p. 227.

assistance which he and his staff gave me and for advice which helped me over the many difficulties inseparable from an organisation of such a kind'.<sup>6</sup> In order to harness the speed and reach of air power to best effect, Trenchard was already learning the value of working closely with allies.

Following the war and amid huge reductions in aircraft, squadrons, people and budgets, the Chief of the Air Staff, Air Marshal Trenchard, wrote a memorandum entitled 'An outline of the Scheme for the Permanent Organization of the Royal Air Force'.<sup>7</sup> It was a particularly important document for it laid out a vision for the development of the RAF from a wartime expedient to a coherent, well-structured organisation which would be observed and often emulated by many nations while they considered the merits of creating their own separate air forces. The memorandum laid out the future structure of the RAF and the disposition of its forces. It announced cutting-edge approaches to training and research, centred upon the creation of a thinking, technological service. He also announced short service commissions, the use of reservists and that the RAF should partner closely with industry. Indeed, as I read his memo and other associated documents, I found that, despite the huge advances in technology, many of the subjects and challenges that he faced remain topics that challenge my Air Force today. A particularly resonant point made in the memo was the identification of the need for the RAF to be given the breathing space necessary to develop its own culture. This was visionary, and would become extremely important in harnessing the potential of air power.

He said that the Air Force needed an 'Air Force spirit' such as had developed during the war, and that this should be fostered, independently of the other Services.<sup>8</sup> His plans were coherent and, in organisational terms, very much ahead of their time.

The RAF required technically minded personnel with the ability to think conceptually in a Service centred on the delivery of air power rather than being subordinated to the overall aims of the other two Services. This is encapsulated today in Joint UK Air and Space Doctrine as the 'airman's perspective' and is expressed as follows:

The characteristics of speed, range, height and time demands specific skills and creates a unique identity for airmen and those soldiers, sailors and

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6 Dispatch in *The London Gazette*, 31 December 1918, copy in *Air Power Review*, Special Edition, Spring 2013, p. 234.

7 HM Trenchard, 'An Outline of the Scheme for the Permanent Organization of the Royal Air Force – Memorandum by the Chief of the Air Staff', 25 November 1919, published in *Air Power Review*, Special Edition, Spring 2013, pp. 257–266.

8 *ibid.*, pp. 262.

marines who operate in the air environment. It is important for all those (of every Service) with a stake in air power to understand these values ...

It goes on to say that:

Air power is not constrained to narrowly bounded areas of operation and may be flexed across theatres. We understand speed in terms of miles per minute and range in hundreds or thousands of miles, but timing to the second. This instinctive empathy with scale, and ease at operating across different levels of warfare (sometimes during the same mission), provide the airman's perspective: the basis for an air-minded approach to applying military force.<sup>9</sup>

The decision to form an independent air force here was made by the Australian Defence Council in January 1919. In physical terms, the British Government's 'Imperial Gift' of 128 aircraft, vehicles, armaments, flying equipment and even hangars was, of course, a great help in providing the basic requirements for setting up a new air force. But it was not simply physical help that the RAF was able to offer. It provided a template that the Royal Australian Air Force could and would follow. Additionally, the RAF and Royal Australian Air Force relationship afforded both organisations a sense of mutual support. This would, of course, be the case for many of the other independent air forces as they took their first tentative steps, particularly those which emerged in the British Empire.<sup>10</sup>

Opposition to the Royal Australian Air Force came from both politicians and its sister Services. In his role as Chief of the Air Staff, the then Wing Commander Williams said he found 'youth and junior rank against [him]'<sup>11</sup> and he regularly sought advice from Trenchard who was able to oil the wheels of progress from afar using his influence and much higher rank in London.

The Royal Australian Air Force emulated RAF structures, publications, working practices, ranks and uniform patterns, although looking around the room I note that somewhere along the way you seem to have lost your belts and bleached your No 1s, perhaps in the Aussie sun. However, the support that the RAF provided was very much reciprocated. The Royal Australian Air Force provided initial flying training for Australian officers who would then serve on short service commissions in the RAF, helping to bolster RAF numbers. Upon return to Australia, those officers would either assume a permanent commission in the

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9 Ministry of Defence, JDP 0-30, *UK Air and Space Doctrine*, pp. 1-8 – 1-9.

10 Mr Sebastian Cox, 'The RAF and RAAF: a close association in war and peace', Wing Commander Keith Brent, *100 Years of Aviation: The Australian Military Experience – The Proceedings of the 2003 RAAF History Conference held in Canberra 4–5 August 2003*, Aerospace Centre, Fairbairn, 2004, p. 114.

11 *ibid.*, p. 116.

Royal Australian Air Force or serve on its Reserve. Whilst such arrangements helped with short-term manning and experience levels for both forces, the longer term effect was to strengthen the bond between the two Services out of which emerged both mutual understanding and a common view of air power.

The contribution and sacrifice made by the Royal Australian Air Force and all of the other air forces that Britain was allied with in World War II were, of course, enormous. The Royal Australian Air Force expanded fifty-fold and the Empire Air Training Scheme provided 27 387 aircrew of whom some 15 476 served in the RAF.<sup>12</sup> Martin Francis says of the Battle of Britain that it 'may have been fought in the skies above "deep England" ... but in terms of personnel it was a decidedly imperial affair'.<sup>13</sup> Importantly, the vast numbers of Commonwealth personnel serving in the RAF perhaps helped the transition of the RAF officer cadre that John James claims were 'in manners and behaviour rather stuffy'<sup>14</sup> between the wars to the more pragmatic and flexible organisation that emerged from World War II. Certainly the pragmatism of the men and women from the Commonwealth was legendary, as was their spirit and sacrifice.

The Berlin Airlift and the Cold War garrisoning in Malta brought an end to the RAF and Royal Australian Air Force serving side-by-side in Europe and the Mediterranean. However, the relationship continued to be extremely strong during both Malaya and Korea. Indeed, Seb Cox referred to the Korean War experience of the two air forces as 'a curious combination in which we see the last vestiges of the outmoded Imperial relationship and thinking, combining with perhaps the first indications of a more balanced and mature relationship'.<sup>15</sup> In Korea, in which the RAF played a relatively minor role, RAF pilots would fly on 77 Squadron, gaining valuable combat experience in the British-made Meteor against similar threats they faced in the Cold War European theatre. This was, of course, a reversal of the World War II experience and perhaps a defining lesson for the RAF as the world order began to change. In the 1970s and 80s, with fewer natural opportunities for interaction, it would not have been unreasonable to expect the relationship to wither, particularly following Britain's withdrawal from East of Suez. However, in addition to our exchange programs, both of our nations continued to take our mutual responsibilities, such as the Five Power Defence Arrangements (FPDA), seriously. Our common airman's perspective, combined with a shared history and culture, has also allowed us to remain close. That

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12 Alan Stephens, *Going Solo: The Royal Australian Air Force 1946–1971*, Australian Government Publishing Service, Canberra, 1995, p. 4, quoted in Cox, 'The RAF and RAAF: a close association in war and peace', p. 122.

13 Martin Francis, *The flyer: British culture and the Royal Air Force 1939–1945*, Oxford University Press, Oxford, 2008, p. 57.

14 John James, *The Paladins*, Futura Publications, London, 1991, p. 171.

15 Cox, 'The RAF and RAAF: a close association in war and peace', p. 124.

relationship has been extremely productive. Sharing intelligence, technological know-how and conceptual ideas have helped both of our forces progress at a much greater pace than we might have done on our own. We have, of course, more recently served on operations together in Iraq, East Timor and Afghanistan, upon which I shall touch later.

### BROADER RELATIONSHIPS – CONCENTRATING ON AUSTRALASIA

Thus far I am aware that I have spoken largely about the RAF/Royal Australian Air Force relationship. But we both have friendships and alliances which are, of course, much broader than just the bilateral. I have demonstrated that many of those relationships come out of similar histories and experiences. Following the British withdrawal from East of Suez, it was recognised that we continued to have significant interests in this region. The United Kingdom was, therefore, very keen to support the Five Power Defence Arrangements. Initially providing air presence over Malaysia and Singapore, the air defence exercises have grown over the years to become large-scale military exercises involving both land and maritime forces. According to Professor Thayer of the University of New South Wales, 'This transformation has been accompanied by the development of a robust consultative structure, complemented by a standing multilateral military component, and a comprehensive exercise program.'<sup>16</sup> Our five nations use our collective experience to assure the stability of this extremely important region with which the UK has many and significant trade and diplomatic ties. Taking part in FPDA exercises is a big demand on RAF resources given operational commitments as well as our distance from the region. Nevertheless, we place great importance on taking part in exercises such as *Flying Fish*, *Suman Protector* and *Bersama Lima* and derive great benefit from them. They offer us opportunities to train collaboratively with our friends in this region and to think beyond Britain and Europe. Indeed, FPDA reminds us about the 'global commons,' something air forces are uniquely placed to police, patrol, project power into, protect and demonstrate hard-nosed capability such that deterrence works. I am particularly impressed by the evolution of FPDA exercises to include up-to-date and testing scenarios including counterterrorism and disaster relief as well as the traditional higher end missions. But what does the UK and the RAF, in particular, bring to FPDA? In recent years, the RAF has, of course, taken part in many operations across the spectrum of warfare including Northern Ireland, the Balkans, Sierra Leone, East Timor, Iraq, Afghanistan, Libya, Mali, the Philippines, the Central

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16 Carlyle A Thayer, 'The Five Power Defence Arrangements: the quiet achiever,' *Security Challenges*, vol. 3, no. 1, February 2007, p. 80.



African Republic and, only last month, Sudan. Taking part in FPDA exercises allows us to share our operational experiences working in other alliances and coalitions. Those experiences have significantly influenced the equipment we purchase and the way in which we use it, which we are keen to demonstrate to our allies and friends to further interoperability. The Typhoon deployment to Exercise *Bersama Lima* in 2011 was a case in point: Typhoons from 6 Squadron deployed to the FPDA exercise in the immediate aftermath of the Libyan conflict in which air power played the lead role.

Dr Tim Huxley, the Executive Director of the International Institute for Strategic Studies-Asia identified that the 'exercises have doubtless helped to build a degree of interoperability between the forces of FPDA members, which has sometimes proved useful operationally outside the FPDA context. This was certainly true in the Australian-led intervention and security presence in East Timor.'<sup>17</sup> And in recognition of the importance that the UK places on the region, the RAF deployed two C-130s and a VC10, as well as ground personnel. The British Army sent a detachment of 270 soldiers from the Royal Gurkha Rifles and HMS *Glasgow* was deployed by the Royal Navy.

In addition to FPDA we do, of course, maintain numerous friendly relationships across the region and engage in many forms of interaction including bilateral talks with many of the nations that are represented here today. The UK and Australia signed a defence treaty on 18 January last year and we recently took part in some particularly fruitful airman-to-airman talks between the RAF and the Royal Australian Air Force.

## FUTURE EQUIPMENT

I turn now to talk of current and future equipment programs. We will share a great deal of commonality of equipment with air forces in the region. By 2020, not only will the UK be operating a battle-proven, swing-role, air superiority platform in the Typhoon, but we will also be flying the most capable, 5th generation jet aircraft ever produced; the F-35 Joint Strike Fighter or Lightning II as it will be known in the UK. The RAF has also made big strides in modernising across our entire fleet with aircraft replacement programs and upgrades. We have clear opportunities to maximise the synergies from flying the same aircraft as many of the air forces present here today including the C-17, C-130J, Hawk and Chinook. I am sure that the introduction of the A400M, providing tactical and strategic airlift capability will also be an attractive option in the future for friends and partners.

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17 Tim Huxley, 'A Strategist retrospective: the future of the Five Power Defence Arrangement', *The Strategist: The Australian Strategic Policy Institute Blog*, 8 November 2012, viewed 11 February 2014, <<http://www.aspistrategist.org.au/author/tim-huxley/>>.

Perhaps also of interest and worthy of discussion, is our novel procurement of Voyager, our air-to-air refuelling, passenger and cargo capability, under a private finance initiative which has an option for leasing spare capacity to the civilian market to make it eminently more affordable.

Another area of expertise we have developed, which demonstrates the value of friendships and alliances, is in ISTAR (intelligence, surveillance, target acquisition, and reconnaissance). In the Mali crisis last year, V Squadron deployed the Sentinel in support of the French, providing a critical, wide area search capability which played a key role in honing air and ground operations in such a vast operational theatre.

As the UK continues to take a lead in developing and operating unmanned air systems (UAS) there will be further opportunities for collaboration with air forces in this region. We have learned a great deal from our Predator and Reaper experiences and we are especially excited about Taranis, BAE Systems' jet-powered, stealthy UAS that has recently successfully completed its first flight trials. Working in collaboration with BAE, UK Defence is looking to this technology to help shape and define our future capabilities as an air force. However, we must remember that we are dependent on, but not beholden to, the equipment and aircraft we operate. The past teaches us that the future is unpredictable; global instability, be that social, financial or political, is all too familiar and there is no reason to believe that there will be any decline in its unforeseeable and complex causes. Economic, political, social and environmental security are underwritten by interdependence and cooperation and this will be increasingly important as we as we become ever more connected. In addition to future partnerships with respect to equipment, I foresee a number of areas worthy of increased collaborative work for friends and partners as we seek to overcome our collective challenges.

## **GEOGRAPHY LINKED TO SYNTHETICS, CYBER AND SPACE**

Working together in the areas of synthetics, cyber security and space will make geography less of a factor to British relationships in this region. As the world becomes increasingly connected and globalised, so the challenges that face us become increasingly common and less defined by our geographical location. We should, therefore, take every opportunity to make use of the air minded and tech savvy personnel in our respective Services to exploit the advances that the digital age has brought us. For instance, shrewd investment in synthetics makes the prospect of a UK Lightning II flying over the North Sea, operating simultaneously with F-35 aircraft in the Tasman and South China Seas, a reality. Synthetics in other areas also offer new training opportunities. For instance, the Joint Forward Air Controller Training and Standards School has trail-blazed the use of synthetic training technology to provide exceptionally realistic battle training for forward

air controllers prior to deployment to Afghanistan. The prospect of networked, synthetic training being part of our forces routine activity is both appealing and imminently attainable.

Cyber security is another area in which geography will be less important to our relationships than in the past. Commentators frequently look at the advantages that our adversaries reap from the connected and globalised world and see only threats. However, I believe that we should be looking to the advantages that lie with us in this rapidly changing environment. Cyber security does not recognise national boundaries and if we are to achieve the advantage over our adversaries in this regard we need to work collaboratively, exploiting our common ethos and established networks as well as exploring new partnerships with new allies and commercial organisations. My Service is taking an active and key role in the UK's recently established Joint Forces Cyber Group.

Similarly, space power is another area in which the RAF is placing great emphasis. We rely very much upon collaborative space power activity given the extremely high cost of some of its technology and applications. Our major ally in this regard is the US but we are also engaged with other partners working on space power initiatives that have great potential.

## **CONCEPTUAL COMPONENT – UNDERPINNING PARTNERSHIPS**

The final area of value for future work, and one that underpins all that we do, is conceptual thinking. There is great potential in exchanging intellectual and innovative ideas with our friends and allies, and I have asked my Air Force to place conceptual thinking at the very centre of everything we do. In particular, I highlight my Chief of the Air Staff's Fellowship Scheme which identifies some of our brightest and best and places them in leading universities in the United Kingdom, such as Oxford, Cambridge, the University of Birmingham and King's College London. The latter two universities provide specialist air power courses tailored to Air Force personnel, and both institutions are represented here today by Dr Peter Gray from Birmingham and Dr Christina Goulter from King's College London. We make use of our CAS Fellows to provide academic rigour, red teaming and think-tank within the Service.

As we leave Afghanistan we must ensure that we do not forget the lessons of counterinsurgency from the last decade, but we also need to be sure that our analysis of the future is cogent as we return to contingency. Libya, Mali, the Central African Republic and Sudan have all demonstrated the need for Her Majesty's Government to respond with alacrity. With the RAF able to deliver across all the roles of air power the Government was afforded choice and flexibility. In the future we are likely to see more air power. And this will include our adversaries with swarms of drones, increased proliferation of high-

tech aircraft and air defence systems. It is for this reason that we need to think carefully about how we protect air power in the long term. The skies are going to be contested and we should not expect the current freedom of manoeuvre we have enjoyed in recent years in Afghanistan and Iraq. Conceptual thinking and collaborative work with allies will be at the heart of examining how we will approach conflict in the future.

By unlocking the potential of our people we develop a better understanding of the world and the dilemmas that we are presented with but we should exchange those ideas with one another to ensure our view is balanced and holistic. Exchange, liaison and loan Service positions provide valuable opportunities for our respective personnel to exchange ideas and to create strong ties. The Exercise *Long Look* program, meanwhile, allows a significant number of personnel from across the RAF ranks to learn from counterparts in the Royal Australian Air Force and Royal New Zealand Air Force. The longer programs, meanwhile, offer another dimension for exchanging ideas and practices. There are over 50 Ministry of Defence and Services exchange and liaison officers currently serving here in Australia. I was lucky enough to spend three years here on an exchange, flying Chinooks, and fully understand the value of immersion in another country's military. Send us your best and we will continue to send our best to you so that they not only work with us as young officers but also represent everything about the nation from which they come. Exchange officers ultimately return to their home units more broadly educated, tougher and more globally experienced than their home-based counterparts. An incident in 2006 perhaps encapsulates both the value of exchange programs and also how closely Australia and the UK have been working in Afghanistan. A pilot, now on my staff, was scrambled in support of an Australian and Dutch patrol that was pinned down in a Taliban ambush in Tarin Kowt. Operating alone and amid an intense firefight, his actions supporting them during the engagement were ultimately recognised with the award of a Distinguished Flying Cross. Any one of us could fall prey to fear; visceral experiences with brothers-in-arms from his time in Australia doubtless helped him find courage when it was needed most.

Exchanges also provide other opportunities. We are, of course, particularly grateful to the Royal Australian Air Force as well as other allies and friends who are helping us maintain the skills of our maritime patrol crews following the withdrawal of the Nimrod from service. Such support is a clear demonstration of the value of these friendships as we reconfigure our forces for the future.

## CONCLUSION

To conclude: Our mutual interests are more entwined than ever due to the interconnected nature of the world. Regional instability, caused by either state or non-state actors, will continue to resonate across the globe against a backdrop of

rapid technological advances that our adversaries will seek to exploit. This period of remarkable change brings particular challenges. We should not be afraid of change; rather, we should seek to use it to our advantage. Today, I have identified how strong the ties between many of us are. In the case of the RAF and the Royal Australian Air Force, our relationship has endured for over 100 years. The same is true of many of our other traditional allies, who are represented here in this room. However, since the end of the Cold War, we have developed many new and fruitful links. One hundred years of aviation has demonstrated the importance of friendships and alliances in adapting air power to address current and future challenges.

As we look back over this remarkable period, we see that friendships and partnerships are not new to air forces across the globe. But there is more we can do, and should do, to strengthen our relationships. I have identified particular areas of synergy that we can exploit, but they need to be underpinned by deep conceptual thought. As we look towards an uncertain future, we should do so with eagerness and enthusiasm. With 100 years of experience of putting cutting-edge technologies to use, we are well placed for harnessing the new, exciting technological advances we have at our disposal. We should look not in awe or isolation to our predecessors but for the successful examples of how they harnessed their organisations in times of great change. The last 100 years has demonstrated that the airman's perspective has allowed us to work together for mutual benefit, developing and proving concepts. As we look to the next 100 years, we should remember the value of those friendships and work together to ensure that we also harness the potential of air and space power for the next century which promises as many advances and opportunities for friendship as the last did.



# AIR POWER IN AUSTRALIA'S FUTURE STRATEGY

MR PETER JENNINGS

I would like to thank Geoff Brown—for whom I am the final warm-up act—for his invitation to speak at the conference. At the time I accepted the invitation I had not been asked to lead the so-called Expert Panel on the new Defence White Paper. My role in that activity requires me not to discuss White Paper processes. So I will leave that to one side as best I can and offer some thoughts instead which are hopefully designed to put the right questions and make the right challenges to our collective thinking about air power.

I do not imagine that I am breaking any White Paper confidences to advise you that there *will* indeed be air power in Australia's future strategy. As has been remarked at this conference we have an Air Force with a relatively young fleet of aircraft and a number of current and mostly locked-on acquisition plans that will continue the process of technological refresh. Many of these platforms will be in service 20 to 30 years from now. So it turns out that a good deal of the shape of our air power future is the product of decisions already taken, in some cases by Governments and Defence Ministers long past. Future investment decisions will add to this existing picture rather than start with a clean canvas. It seems unlikely to me that the RAAF will face an existential moment like, for example, the RNZAF did in the 2001, when the decision was taken not to replace the Skyhawk aircraft. It might happen, but I struggle to imagine a future Australian Government taking a decision to remove combat fighters from the order of battle.

So, my approach instead is to offer some thoughts about the types of air power that we will deploy, the strategic circumstances prevailing and the likely purposes for which air power will be used. Within that framework there is plenty of room for debate about whether we are making the right investments of our air power dollars and whether there might not be better ways to design air power's role in Australian strategy.

I propose to canvass seven questions relating to air power:

- Do we have the right appreciation of the strategic outlook?
- What do current uses of air power in the region tell us about likely future uses?
- What is the role for air power in a post-'Defence of Australia' planning environment?

- What is the value of a constrained air power capability in an era where our strategic edge is eroding?
- What is the place of the US alliance?
- How should we be thinking about air power in operations short of war?
- Lastly, how does air power fit in Australia's joint and maritime agenda?

## DO WE HAVE THE RIGHT APPRECIATION OF THE STRATEGIC OUTLOOK?

In my view there is right now some confusion about how to think and write about our strategic outlook. This has been caused by mixed messages being delivered in a series of past major policy statements. The 2009 Defence White Paper painted a picture of greater strategic complexity and uncertainty emerging in the Asia-Pacific. The response to this was a plan for a significant long-term increase in defence spending, and a strong focus on maritime capabilities. Although the language of the White Paper was moderate on China, the broader background buzz was more negative about Beijing and emphasised what Australia might do to effect some strategic weight in the region.

Contrast that with the three major foreign and defence policy statements released by the Gillard Government. The Asian Century White Paper was remarkable for the optimism it expressed about long-term stable growth in the Asia-Pacific. Defence and security were a rather reluctant afterthought in what was primarily an economist's positive view of the region. The Prime Minister's January 2013 National Security Statement described Australia's strategic landscape as 'largely positive' and 'relatively benign',<sup>1</sup> language which partly helped to explain the more than \$20 billion worth of defence spending cuts and deferrals that had been imposed in the proceeding four years. The 2013 Defence White Paper significantly moderated the language on China and on Australia's role in the region without changing force structure settings.

To say the least this is a confusing legacy for current policymakers. It had something to do with positioning between Prime Ministers Rudd and Gillard. It also reflected an ambivalence in the official community about how to deal with the very different views of the region that exist depending on whether you think like an economist or like a strategist.

In thinking about the future of air power, as for all of Australia's defence capabilities, I think we need to more than just tinker with the language of previous

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1 Department of the Prime Minister and Cabinet, *Strong and Secure: A Strategy for Australia's National Security*, Department of the Prime Minister and Cabinet, Canberra, 2013, pp. ii, 11 & 27.



policy statements. The policy community needs to come to a balanced view about how to align economics and national security perspectives. We need to think seriously about the continuing challenge presented by the risk of state-on-state conflict. At the other end of the conflict spectrum we need to think in broader terms about how to handle state fragility.

The recently released United States *Quadrennial Defense Review* (QDR) gives an insight into the Pentagon's thinking about strategic trends.<sup>2</sup> The QDR says that America's strategic outlook is becoming 'more volatile, more unpredictable, and in some instances more threatening'.<sup>3</sup> This is an environment where 'the United States should not plan to rely on unquestioned technical leadership in all fields', where ground forces will be cut to the point that American forces will 'no longer be sized to conduct large-scale prolonged stability operations', and where more weight will be put on allies' ability to 'undergird the ability of the United States to face future crises and contingencies'.<sup>4</sup>

In my view the QDR captures the strategic trends correctly. I do not wish to imply that there are direct threats to Australian territory but there are definitely risks and threats to Australian interests in the wider region. That is my starting point for thinking about the utility of air power and, indeed, other forms of Australian power.

## WHAT DO CURRENT USES OF AIR POWER IN THE REGION TELL US ABOUT LIKELY FUTURE USES?

My second question was 'What do current uses of air power in the region tell us about likely future uses?' Many people here will know the details better than me but, broadly, what I see is this:

- In North Asia we are seeing the emergence of competitive modernisation in weapons acquisition. Some could call this arms racing. This is by no means limited to air power but air power is a key element of the force structure plans of China, Japan, Taiwan and South Korea.
- In South-East Asia we see much smaller-scale acquisitions which will generate limited air power capabilities for a number of states. Singapore is clearly leading in generating high-quality capabilities.
- In South Asia, India leads on developing major air power capabilities.

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2 United States Department of Defense, *Quadrennial Defense Review 2014*, Washington, DC, 2014.

3 *ibid.*, p. III.

4 *ibid.*, pp. VII, 9 & 25.

- Less visible, but just as significant, is the development of more effective air defence systems region-wide and more effective enablers of air power from training to logistics.
- In Europe and America, air power capabilities may be increasing in terms of what individual platforms can deliver but overall numbers are inexorably decreasing.

In our broader region, in terms of the use of air power, we see daily demonstrations of the interests of countries to use air power and to show their neighbours what they can do. So for example I am thinking here of things like China's declaration of an ADIZ (air defence identification zone); the increasing use of air assets to assert sovereignty or challenge control around disputed territories; the showy use of air capabilities to mount national responses to disasters; and the roles of industry and acquisition programs to demonstrate national capacities.

Overall, looking in the Asia-Pacific we see an intensifying pattern of using air power in ways that assert or demonstrate national interest. This can be positive—C-17s delivering aid to the Philippines—or it can be more risky—competing air combat patrols over disputed island territories. But I think it is undeniable that this behaviour is on the rise. In almost all cases, though, we are talking about small packets of capability that fall short of what might be needed for prolonged and decisive high-end military operations.

The short- and medium-term air power in the Asia-Pacific is going to look like this, only more so. At the higher end of capability this will involve countries with air power capacities to damage each other, but probably not decisively. Short of war, air power will play its role in the more competitive, riskier strategic environment we see evolving.

### **WHAT IS THE ROLE FOR AIR POWER IN A POST— 'DEFENCE OF AUSTRALIA' PLANNING ENVIRONMENT?**

That leads me to my third question: 'What is the role for air power in a post—"Defence of Australia" planning environment?' That line may prick up some ears. What I mean is that I do not see a return to the debates which took place in the late 1980s and early 1990s about air power's role in the defence of geographic Australia. The pattern of strategic events has moved on. In the 2000 White Paper a concept emerged of Australia thinking about its own defence in the context of regional stabilisation operations—you might think of this as 'Defence of Australia Plus'. The 2009 White Paper extended that thinking further afield, 'Defence of Australia Plus Plus'.

Now is the time to start thinking in more systematic terms about how far to shape air power and other capabilities to address the 'plus plus' aspects of Australian

strategic interests—that is to say, the alliance and regional security contributions we can make. Should these drive force structure priorities? Although the defence of the Australian homeland remains an irreducible responsibility, the fact is that a direct military threat to Australia is such a remote probability that I just do not see how one can meaningfully design air power capabilities around it. Further the experience of the last decade and a half has told us that we are better postured to manage defence of Australia tasks by taking our military capabilities to the source of the risk or instability.

Those thoughts lead to some fairly non-trivial consequences for the design of the Australian Defence Force (ADF). Broadly, I suggest we need to think about Australian air power in terms of three tasks. First, irreducible core tasks we should make sure we can perform without allied assistance in support of our own defence needs in Australia and our nearer region. Second, critical high-end niche roles we would expect to deliver only in an alliance or coalition context. Third, air power capabilities we should maintain to deliver in a broader regional context.

It then becomes a matter for government decision-making how much alliance and regional tasks might drive force structure decisions. Many air power capabilities, including for example Growler, can be justified against the Australia and nearer region core tasks. But it seems to me to be a necessary policy objective that some specific capabilities might be optimised for their alliance value. That is where the 2009 White Paper takes us on some key naval capabilities. It also reflects the realities of where key capabilities, like combat fighter aircraft, are most likely to be used.

It may be objected that opening up a force structure debate beyond the constraints of a defence of Australia strategy will lead to an outbreak of indiscipline in equipment acquisitions. To which I would reply: 'What discipline?' The only real discipline is the funding base. It is necessary also to acknowledge the fact that big shifts in regional security are having the effect of pushing the range of Australia's interests out to a broader region. In 1987, for example, now declassified Cabinet Submissions on China and Japan could find little to say about Australian defence interests in North Asia. I wrote about these submissions recently. It would not be possible for a cabinet submission in 2014 to take that approach because our interests have become so heavily engaged in North Asia. The defence of Australia now begins with a need to use the ADF more consciously as a shaper of regional security.

## WHAT IS THE VALUE OF A CONSTRAINED AIR POWER CAPABILITY IN AN ERA WHERE OUR STRATEGIC EDGE IS ERODING?

My forth question is: ‘What is the value of a constrained air power capability in an era where our strategic edge is eroding?’ The idea of a strategic edge has long been a cherished phrase in Australian defence thinking. The more one thinks about it the harder it is to be precise about what it really means. For example, in fighter technology the superiorities of one platform over another have to be balanced against broader considerations like, for example, the capacity of a force to sustain capabilities in service, and the overall numbers of platforms. My colleague Andrew Davies demonstrated at the 2010 Air Power Conference that quantity has a decisive quality all of its own.<sup>5</sup>

There are clearly areas where the possession of a better missile, or sensor or a superior intelligence capability may confer a tactical advantage, but in the Asia-Pacific we are seeing a rapid advance in the military capabilities of many countries. The QDR I quoted above is reconciled to the reality that the United States will lose ‘technical leadership’ in a number of fields.<sup>6</sup> It seems clear that the same fate awaits Australia too. Looking out 15 to 20 years, security in the Asia-Pacific will be a competition of equals—at least in terms of a platform or system assessment.

For Australia, I suggest this means a number of things: First, we should sharpen our thinking about where we really believe we must maintain necessary strategic edges. A small number of capabilities will fall into this group. Are there areas where we need to disproportionately invest to make sure we retain leading edge capabilities? That is a difficult question because budget logic means we will not be able to pick all the capabilities we want.

If it is the case that our real edge is the product of our capability to maintain and operate complex systems of aircraft with necessary support, maintenance and training, then we will need to have some frank conversations about the basis of capability. Are we funding all the necessary whole-of-system things we need to deliver key capabilities? Do we need to remediate under-investment in key back-of-house enablers? I suspect the answer to that is yes. So the path to sustaining key leading edge capabilities will be to reduce their overall numbers and fill in critical system enablers.

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5 Dr Andrew Davies. ‘The Defence White Paper and Its Implications for Australian Air Power’, Wing Commander Keith Brent, *The Art of Air Power: Proceedings of the 2010 Air Power Conference*, Air Power Development Centre, Canberra, 2011, pp. 231–261.

6 United States Department of Defense, *Quadrennial Defense Review 2014*, p. 25.

The other point to make is that overall numbers of platforms are and will continue to decline. No realistic budget projection will reverse that trend for us or our key friends and allies. But that is only a problem if one imagines the task we are planning for is the single-handed defence of Australia against an overwhelmingly large adversary. In strategy, one should never say never, but to me this looks like an illusory problem. I can only conceive of a threat like this in which security has broken down across the whole of the Asia-Pacific or indeed the world. That is a different type of challenge.

### WHAT IS THE PLACE OF THE US ALLIANCE?

My next question is, of course, related to this one about maintaining an edge, and that is: 'What is the place of the US alliance in thinking about air power?' The answer is that the alliance is central. This view is too often derided by commentators as somehow reflecting an attachment to the 'Anglosphere,' a term in some circles which is code for everything loathsome and old-fashioned. To those who think the alliance is a relic of the past I would say that it is time to update your understanding of alliance cooperation, which has utterly been transformed by the experience of the decade after 9/11.

It is clear from the US QDR that America will have higher expectations and deeper asks of its Asia-Pacific allies in coming years. A lot of factors inform that US view: exhaustion after Iraq and Afghanistan, their domestic financial situation, and the complexity of Asian security. For Australia there are risks and opportunities. A risk is that we will not read the American signal clearly enough and conclude that we can continue to underplay the contributions we make to the alliance. That would not be good. The opportunity though is that we can deepen cooperation in a range of areas that will promote both our national interests.

I have recently written about this on the ASPI Strategist Blog site.<sup>7</sup> In essence the QDR seeks to protect from US spending cuts a range of areas of very high priority to Australia. These include air power, cyber, space, ballistic missile defence, Special Forces and small number of other capabilities. We can deepen alliance cooperation in all of these areas. The price we will pay is a continually rising level of US expectation about Australia's capacity and willingness to be a strong ally. The benefit is the access to technology, the continued engagement of the US in our key security concerns and the spin-off value of preserving stability in the Asia-Pacific.

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7 Peter Jennings, 'United States: so long and thanks for all the fish', *The Strategist: The Australian Strategic Policy Institute Blog*, 12 March 2014, viewed 20 March 2014, <<http://www.aspistrategist.org.au/united-states-so-long-and-thanks-for-all-the-fish/>>.

## HOW SHOULD WE BE THINKING ABOUT AIR POWER IN OPERATIONS SHORT OF WAR?

My second-last question is: 'How should we be thinking about air power in operations short of war?' This particularly goes to the use of air power in our broader region. My view is that this coming decade will push air power to the forefront of how Asian countries seek to demonstrate their power and influence. We see that in the behaviours of states in the region right now. So my question for this audience is: are we thinking sufficiently about Australia's air power interests in this environment?

There are potentially some good opportunities for Australia to take a lead in shaping regional air power around constructive, stabilising activities. For example, more could be done to develop pre-planning and thinking on the cooperative use of air power for humanitarian assistance and disaster relief (HADR). This could include things like a more elaborate system of pre-positioning HADR supplies; developing a network of pre-established diplomatic clearances for first responders; designing personnel exchanges and shared command opportunities to train for HADR and bring key responder countries into a more conscious planning framework for HADR response.

One reaction to this might be to say that the RAAF is already well versed in HADR response. It most certainly is, but if you buy my argument that air power will be a key instrument of choice for countries in the region wanting to show their power and influence, then the question is how far can we push this thinking to integrate air power into a managed system supporting regional stability. I really think this is worth expending some planning time on. When the Government picks up the phone to ask Defence to respond to a range of regional events in coming years, Air Force will very often be the first responder. Shaping that response environment will be a key coming task.

## HOW DOES AIR POWER FIT IN AUSTRALIA'S JOINT AND MARITIME AGENDA?

Finally, my last question is: 'How does air power fit in Australia's joint and maritime agenda?' At one level the answer is obvious: it is an integral component. But in terms of public perception I would argue that air power is not as strongly perceived as a central part of a maritime strategy, more a smaller-scale enabling component of that policy. And yet there are some key aspects of a maritime strategy which I suggest remain to be fully thought through. For example, does our maritime strategy anticipate a role for Australian amphibious capabilities in coalition operations? If so, what is the role of Australian air power, if any, in

providing air cover for maritime platforms? That seems to be to me a rather key question around which I see no clear answers at the moment.

It's time to think harder about how air power fits into Australia's broader strategic framework for defence. Is there a need for a more prominent Air Force planning role in joint policy thinking? Does the maritime strategy need to be modified, changed or added to? These are the key questions I identify for the future of air power thinking in Australia.





# CLOSING ADDRESS

## AIR VICE-MARSHAL GAVIN DAVIES

Ladies and gentlemen, I thought perhaps closing something as big as the 2014 Air Power Conference would be relatively straightforward, but I was wrong. Part of that problem really is because we have had such a tremendous line-up of specialists, who have perspectives that we can draw on and learn from, that it would be very difficult for me to go back and go through each of those presentations. So I do not intend to do that because that would be, in my view, a fail.

But there were along the way, I suggest, some fairly rudimentary, some enduring and, as with Peter Jennings in the last presentation, some almost confrontational thoughts that, as air power advocates, we should begin to work through, understand and perhaps bring to future air power conferences around the world.

If I could briefly just highlight a couple of those thoughts that I picked out: people—it comes up time and again—communications and lessons learned. On this last point, perhaps I could refer to Air Marshal Mark Binskin, current Vice Chief of the Defence Force, and he says that we talk about lessons learned a lot but, in his view, they are only lessons observed.

We need information and, more particularly, information with which to make decisions. We need foresight and enough courage to make a change; perhaps those two are linked. What also kept coming up was control of the air. Perhaps the one that holds all of those together, or makes most of those possible, is the beginning—strategic thinking. Strategic thinking and the opportunities to do strategic thinking perhaps are left behind all too often.

About 10 years ago at this very venue, a previous Deputy Chief of Air Force, Air Vice-Marshal Roxley McLennan, stood up to provide some closing observations at the 2004 Air Power Conference. That conference featured, as it did here, network centric warfare. How far have we really moved?

The Royal Australian Air Force in Roxley's time was somewhat different to the one we find ourselves in right now. Back then, as he spoke, Boeing 707s and Caribous, aircraft designed in the 1950s and 1960s, were committing airlift—they were also receiving noise complaints throughout Australia and around the globe. Our last HS748s had only recently been retired. C-130Hs were just finishing operations in the Middle East, and C-130Js were about to go on their first deployment. The Operation *Slipper* command and control diagram, we could fit that on one page. The delivery of the first Wedgetail was still five years away, and all RAAF aircraft

were manned. The RAAF's strategic reach was embodied in the F-111 force at Amberley, where it remains today but now in the form of C-17s, KC-30s and Super Hornets.

Some things have not changed, however, particularly if you ask Sanu Kainikara, Sandra Finney, Keith Brent and Debbie Fisher hiding over there in the wings, as they did in 2004, hoping that the conference would be a success. Ladies and gentlemen, if you would join me in congratulating the organising team and Air Commodore Andrew Dowse, our MC, in what I think is an air power conference that is the best seen to date. Well done, team.

Back in 2004, Roxley's closing point was not about hardware, however, his key observation on network centric warfare was that the main challenge was really human; one of training, of culture, of removing tribalism. I would like to pick up where Roxley left off a decade ago and I would like to talk about the generational change in Air Force in the next 10 years.

We have had a great opportunity here to listen to some world-class speakers at this 2014 conference, commemorating a century of military aviation—Seb Cox, Dr Richard Muller, as well as our own Professor John McCarthy and Professor Blainey. And, by the way, Professor Blainey could not be here today, but I thought that was most unfair to him at the bookstore in New South Wales, so I am prepared to offer him \$20 for the book.

They started off providing us with some insightful views on air power up to the end of World War II. They were followed by some excellent papers from Professor Robert O'Neill, Mark Clodfelter, Peter Gray and Ben Lambeth, who took us through the air campaigns in the second half of last century. We also heard some thoughtful reflections on the air campaign from Colonel John Warden, some thoughts on irregular warfare from Christina Goulter and on Soviet and Russian air power from Sanu Kainikara. We were then privileged to hear some invaluable insights and welcomed perspectives from our allies in the US and UK, with presentations on the 2003 Gulf War from General 'Buzz' Moseley, Air Chief Marshal Sir Glenn Torpy and Air Vice-Marshal Mel Hupfeld. We then had perspectives on our partnerships from Air Chief Marshal Sir Andrew Pulford, before finishing with some insightful views from Peter Jennings. I would like to take this opportunity on behalf of the Chief to thank all the speakers for their contribution in what I believe has been an outstanding conference. Thank you very much.

One thing highlighted over the last couple of days is that even the most far-sighted observers could not have predicted or comprehended the amount of generational change that would occur over the first 100 years of military aviation. The last 100 years has seen flimsy contraptions of fabric and wire—as we saw when the Boxkite flew again at Point Cook just 12 days ago—evolve into some of the most

sophisticated machines on the planet, harnessing speed, perspective and precision to generate effects from the tactical to the strategic. This evolution of technology, however, has not always been matched with the evolution of doctrine, with the evolution of training and the evolution of culture; those critical inputs that allow the technology to realise full potential.

The changes in the Royal Australian Air Force I mentioned in the last decade I believe are nothing compared to what we will experience in the next 10 years. We are still building up our capability and experience levels with the introduction of JORN (Jindalee Operational Radar Network), Wedgetail, Vigilare, C-17, KC-30 and Super Hornet. And I would like to add here in the wider defence context, and just as important in my view, Tiger, MRH-90, Seahawk Romeo and C-band radar, as we begin to talk about space and beyond space in terms of GPS and communications.

Soon the Government will entrust us with some of the most impressive air power capabilities on the planet. The Growler, P-8, Joint Strike Fighter and, yes, I can say Triton—following the announcement today from the Prime Minister that Australia is acquiring Triton. It will give us technology unsurpassed by any small or medium air force.

However, we will never realise the full capability of these systems if we, the people in our respective air forces, do not undergo a generational change equivalent to the generational change in the technology that we intend to operate. The new platforms will require us to update our core processes and structures, such as the recent changes to our security forces, the planned changes to our command structure and our intelligence organisations. These will require new operating concepts and doctrine to meet not only the demands of new technology, but the demands of the modern world, from rapid responses to humanitarian crises, to meet the exacting domestic and global expectations regarding casualties and collateral damage in full spectrum operations. Air Force will need to be able to anticipate, comprehend and respond to these demands to maximise our potential and avoid the misjudgements so clearly articulated by our speakers over the last two days.

The new technology will also require a generational change in training and education, and more importantly in our culture. The Royal Australian Air Force New Horizon program is only one initiative to shed some of the artefacts of the past and to prepare Air Force for the demands of the future. Air Force needs to be able to fully harness its human resources if it is to operate the new technologies to their fullest, and as such must take steps to continue to attract, to educate and retain suitably qualified and experienced people.

Additionally, the Air Force culture must be able to anticipate future changes in technology and our environment, as well as progress with our allies and

understand our adversaries. The last two days has been full of examples where failure to do so has resulted in suboptimal outcomes to air forces and air power.

Finally, Roxley's last point 10 years ago was as pertinent today as it was when he was speaking on network centric warfare. The challenge is to shed our tribalism and to utilise the full capabilities of our new technology as a joint force. The Growler is a good example here. The platform needs to be seen not only as an Air Force platform, but as a joint asset that can assert dominance of electromagnetic spectrum over any battlespace, from an irregular war to an amphibious task force.

The Air Force and the ADF must be able to understand the potential, and just as importantly the limitations, of the new capabilities to best employ them. This will require education in leadership, and a good deal of joint collaboration and both virtual and simulated and real-world exercising.

We need to be able to contribute to the achievement of the joint force commander's objectives. It is only in the achievement of these joint objectives that a small force such as the ADF can achieve the strategic outcomes that the Government will surely demand of us. We are not, however, going about this journey alone. We specifically invited our friends, partners and allies, both here at the podium and in the audience, to this conference to share their experiences and perspectives of not only the last decade but also the next. We can learn from them; we can learn from those that are further along the capability journey than we are; and we can work together with air forces that are at the same point in the journey.

We must also be aware that others will be watching so as to learn from our successes and from our failures. I am pleased to see that the air power doctrine released this week has elevated international engagement to an enabling mission of air power.

A fundamental lesson from the last century of military aviation is that our Air Force will be asked to operate at short notice far from our shores and almost certainly in a coalition. This is but one of the many lessons we need to heed in reflecting on this conference, the commemoration of 100 years of military aviation in Australia.

So on behalf of Air Marshal Brown, I would like to thank you for your attendance and your contribution. Safe travels for those that are close and those that have a little way to go. With that, I would like to take this opportunity to close Air Power Conference 2014. Thank you ladies and gentlemen.