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CONTRIBUTIONS TO THE ROYAL AIR FORCE AIR POWER REVIEW

The Royal Air Force *Air Power Review* is published under the auspices of the Director of Defence Studies (RAF) and has the sponsorship of the Assistant Chief of the Air Staff. It is intended to provide a forum for the publication of high quality and academically credible articles on air and space power. The aim being to educate and stimulate debate within both the military and academic communities and to promote the evolution of air and space power thinking within the broader military environment. This publication is also intended to support the British armed forces in general and the Royal Air Force in particular with respect to the development and application of air power.

Contributions from both Service and civilian authors are sought which will contribute to existing knowledge and understanding of the subject. Any topic will be considered by the Air Power Review Management Board and a payment of £200 will be made for each article published.

Articles should be original and preferably not previously published, although those of sufficient merit will not be precluded. Between 2,000 and 10,000 words in length, articles should list bibliographical references as end notes, and state a word count. Lengthy articles may be published in instalments. Contributions from serving military personnel should be in accordance with 2008DIN03-020.

Material should be submitted in Microsoft word, on CD or by e-mail and should be accompanied, or followed, by numbered page copy plus any photographs and illustrations. Digital pictures should be saved as TIFFs or JPEGs @ 300dpi.

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Foreword

This edition of *Air Power Review* (APR) contains an eclectic mix of articles, ranging from a consideration of what, if anything, is special and distinct about air power leadership, through our very own 'Letter from America,' to a thorough analysis of the Jebel Akhdar War. All of these thought-provoking articles yield valuable lessons for practioners and theorists of air power, but as always, if the quality of the journal is to be maintained, we need to continue to expose a broad range of challenging thinking, and I would encourage all potential contributions to be made in line with the guidance contained at the Royal Air Force Centre for Air Power Studies (RAF CAPS) website, www.airpowerstudies.co.uk

The first article in this edition is a timely analysis of China's potential as an air power, by Flight Lieutenant Kenny Fuchter. Relatively little work has been done in this area, and this essay is particularly valuable in looking at the strategic and economic context as well as considering the nuts and bolts of hard-edged capability.

Next, Air Vice-Marshal (Rtd) Peter Dye charts the history of the Jebel Akhdar War. Worthy of study in its own right, it also yields some hugely relevant generic lessons about fighting insurgencies. As Air Vice-Marshal Dye points out, military force was applied within a strategy that balanced ends, ways and means, and although the achievements of the RAF have tended to be overlooked, air power was critical in delivering speed, sustainability, intelligence, fire power, leverage, low casualties and political credibility to the joint campaign.

Assistant Professor Jørgen Maaø examines leadership in air operations. His interesting paper determines that air operations demand a particular leadership style that is different to other forms of military command, because of the unique characteristics of the air environment. His careful analysis does not always make for comfortable reading, and while his examples are based on his experience of the RNoF, I would suggest the lessons are equally pertinent to the RAF.

Michael Peszke's essay on the Polish Air Force in the United Kingdom, 1939-1946 appears, on the face of it, to be a fairly specialist topic. In fact, it is of huge interest to the more general reader in providing a fascinating perspective on coalition warfare from the point of view of a smaller contributor, and we would do well to reflect on how we have treated our allies in the past, and consider whether much has changed today, in terms of our attempts to achieve empathy or understanding. Certainly,

old NATO hands will recognise the reputation that the British enjoy for a sometimes unwarranted degree of arrogance. Mr Peszke also dispels some of the myths of 1940, notably that Poles acted on their own individual initiative to volunteer for the RAF. As he makes clear, the division of the remnants of the Polish Air Force between France and Britain was a conscious decision, taken and implemented after careful consideration by the Polish leadership of the day.

Our final paper takes the form of what we hope will become a regular feature, Group Captain Carl Scott's 'Letter from America'. This is a tour d'horizon of the latest thinking from the country that remains our most important ally and the dominant global air power. His provocative and insightful piece provides comment on American attitudes to themes as diverse but relevant as airpower in counter-insurgencies, cyber operations and 'zombie wars'.

To conclude this edition, Air Commodore Julian Stinton offers a challenging viewpoint on joint operations. Delivered in inimitable style, his thinking, in particular on task-organised air-land teams as an antidote to a doctrinaire approach based on centralised Air Command and Control, strikes a chord with several recent articles published in this journal.

In the historic book review section, Air Commodore Neville Parton takes a detailed look at Alexander Seversky's *Victory Through Air Power*. As he notes, this is the only book on air power to achieve best-seller status and to be turned into a Disney film! However, there are other reasons to consider it in depth, and Seversky's principles of air power provide a useful yardstick against which to judge current doctrine.

Over the past few issues I have been keen to encourage dialogue and debate through the medium of the letters section. It is gratifying, therefore, to be able to publish 4 letters in this edition. I would encourage all readers to consider joining the growing band of those who have shared their views and opinions already.

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Royal Air Force

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"Air Power and the Environment: The Ecological Implications of Modern Air Warfare"

The Conference of:

The Air Power Studies Division,

King's College London

and

The Royal Air Force

Centre for Air Power Studies

KING'S College LONDON

ROYAL AIR FORCE

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Concordia res parvae crescent

"Work together to accomplish more"

Royal Air Force College Cranwell
United Kingdom
26 and 27 August 2009

Environmental responsibility already lies at the forefront of our western world perspective and is constantly growing in importance. Ecological activism, which used to be a fringe movement, has now become mainstream. In 2007 Al Gore and the Intergovernmental Panel on Climate Change won the Nobel Peace Prize (and an Oscar!) for their efforts to raise environmental awareness. Greenpeace, which uses "non-violent, creative confrontation to expose global environmental problems," alone has no fewer than 220,000 members in the UK and 2.8 million worldwide. Ecologists, environmentalists, activists, lobbyists and of course strategists are already turning their attention to ecological aspects of modern warfare, including land mines, cluster ordnance, erosion and soil damage, air pollution, deforestation, nuclear testing and proliferation, oil spillage and fires, DU contamination, the disposal of ordnance, and so forth. It seems likely that such concerns will also become increasingly mainstream.

As a consequence, governments and their armed forces will doubtless be paying more attention to the serious ecological ramifications of conflict. Some already are. The Global Strategic Trends paper published by the MoD's Development, Concepts and Doctrine Centre (DCDC) illustrates the importance now being placed on these matters by cutting-edge British strategists.

Balancing strategic and operational needs with both military and environmental ethics is certainly not impossible, and responsible armed forces, including the Royal Air Force, are already thinking deeply about how best to balance what superficially seem to be (but actually are not) competing imperatives.

This innovative conference – the first on this topic in the United Kingdom – will touch on several broader security themes and topics but will focus especially on the concepts and practices of modern air power and their environmental implications.

The organisers intend the conference – to be held at the historic and prestigious Royal Air Force College – to attract practitioners, policy-makers, academics and also university students (for whom attendance will be free upon presentation of a student id card), and for it therefore to wrestle analytically with big air power-related themes and topics at the heart of current strategy and security debates.

The conference proceedings will be published subsequently in book form by the Royal Air Force Centre for Air Power Studies.

Some topics:

- Climate change and security
- Strategies to prevent, mitigate, and redress war's environmental consequences
- Warfare and environmental law
- The historical targeting of oil and industrial infrastructure
- Contemporary targeting strategies for oil and industrial infrastructure
- Environmentally harmful / acceptable ordnance
- Decommissioning and disposal of ordnance
- Aviation fuel management
- Air forces and carbon emissions
- Air forces and alternative fuel sources
- Air forces and resource / waste management
- Real versus synthetic training

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Chinese pilots parade in front of their J-10 fighters

Air Power and China in the 21st Century

By Flt Lt Kenny Fuchter

Introduction

The Twentieth Century was the 'Air Power Century'. From the birth of powered flight at it's beginning to the first 'space' war at the end, air power and its application played a key role in its shaping. As the Twenty-First Century unfolds it seems likely that the importance of air power will continue to grow. Indeed it could be argued that the Twenty-First Century will be the 'Aerospace Century'. In 2008 the worlds' sole superpower, the United States, has a vast asymmetric advantage in all aspects of air power over its nearest rivals, an advantage that appears unchallengeable in the near future. It is this superiority that enables the U.S. to regularly utilise air power as a foreign policy tool, often of initial recourse and often unhindered. As RAND have noted:

'Aerospace power has become the archetypal expression of the U.S. ability to project force in the modern world.'[1]

However, there are other countries that aspire to be great powers, China chief amongst them. It could be argued that with the a fifth of the worlds population, a burgeoning economy that is currently the worlds third largest and a large military, China is already a great power. But in the 21st Century is it possible to be a great power without considerable air power? This paper will consider China's current air power capabilities, paying particular attention as to how this has changed in the recent past, where it is going in the future and where that leaves China in relation to its regional rivals. China's burgeoning space based programmes will also be examined. Then, by scrutinising China's current national security goals, particularly those identified by the Peoples Liberation Army (PLA), the role of air power in securing each of them will be examined. In identifying and assessing these roles in achieving China's national security agenda, it will be possible to identify to what extent China has been developing its conventional military arm to decisively influence regional power relationships and therefore, whether China can today be classed as a great power.

CHINA'S AIR POWER

'In early February 1991, China's High Command was stunned to realize just how far behind modern militaries the People's Liberation Army (PLA) had fallen. The opening days of the Gulf War convinced PLA analysts that they were witnessing a revolution in military affairs (RMA).'[2]

As Desert Storm unfolded China witnessed with horror as a large standing army, equipped comparably to their own (many of Iraq's tanks were of Chinese origin) and trained to fight along similar lines, was systematically destroyed, largely from the air. It was a profound shock, although as Shambaugh notes, it was not the first time that China had been forced to recognise its military shortcomings. Only 12 years earlier, in 1979, China had performed poorly in its punitive attack against Vietnam. Incredibly, no air power was brought to bear against their adversaries.[3] Prior to this in 1978, the Chinese government under Deng Xiaoping, had recognised the need for general reform and had embarked upon the national strategy of 'Four Modernizations', in agriculture, industry, science and technology and finally, national defence.[4] Deng justified defence as the lowest priority by announcing that the danger of major world war was remote. In 1985 it was declared by the Central Military

Commission (CMC) that the greatest danger faced was no longer "early, major, and nuclear war (as foreseen by Mao) but rather 'local limited war'.[5] Because the threat was low, the PLA could afford to take time to reform and not waste valuable resources that were important for economic growth. A number of events were to upset this mindset profoundly and fuel the drive for transformation. Firstly, as discussed above, was the Gulf War where the combination of aerospace systems demonstrated just how far behind China had fallen. Secondly, the stand off with the US over Taiwan in 1996 raised the prospect of a confrontation with the U.S. military in any future Taiwan crisis.[6]

Finally, the Kosovo crisis of 1999 again emphasised the superiority of NATO air forces and also demonstrated an interventionist stance that alarmed China. This last point coupled with the bombing of the Chinese Embassy in Belgrade resulted in a barrage of invective against the U.S. unequalled since the Cultural Revolution and the Vietnam War.[7] The transformation that has been driven by these events has been impressive. The PLA have evolved from preparing to fight 'local limited wars' through 'local wars under high tech conditions' to the current 'local wars under conditions of informationization'. As the U.S. Department of Defence note:

'The PLA is pursuing comprehensive transformation from a mass army designed for protracted wars on its territory to one capable of fighting and winning short-duration, high-intensity conflicts against high-tech adversaries – which China refers to as 'local wars under conditions of informationization.'[8]

Fig 1 The J-11 China's first modern multi-role fighter[17]

Or in China's own words:

'To effectively fulfill its historic mission in the new stage of the new century, the PLA is speeding up the revolution in military affairs with Chinese features and enhancing in an all-round way its capabilities of defensive operations under conditions of informationization.'[9]

It is recognised that this will take time to achieve, indeed China's aim is to lay the foundation by 2010, make major progress by 2020 and reach the goal of being capable of winning informationized wars by the mid Twenty-First Century.[10] One of the major areas of focus for this transformation has been China's air power capability (or hitherto lack thereof). The People's Liberation Army Air Force (PLAAF), where China's main air power capability lies, has been at the top of the PLA's funding allocations for much of the past decade[11]. The priority for funding in the Tenth and Eleventh Five Year Plans (2001-2005 & 2006-2010) has been the air force, navy and strategic missile forces, while the once dominant ground forces lag behind.[12]

People's Liberation Army Air Force (PLAAF)

In 2007 the U.S. Department of Defence estimated that China had around 2,325 operational combat aircraft[13] a major

drop from the 3400 it had in 2004, reflecting the ongoing modernization programme. A programme that was emphasised in China's 2006 Defence White Paper:

'The Air Force is working to build an informationized air fighting force with both offensive and defensive capabilities. It is reducing the number of combat aircraft, giving priority to the development of new fighters as well as air and missile defence weapons. It is working to enhance command and control systems.'[14]

The majority of these aircraft belong to the PLAAF. However of these only around 300 are modern 4th generation aircraft[15] with the remainder being older 2nd and 3rd generation aircraft of Soviet design, aircraft that have repeatedly proven to be ineffective in combat against modern rivals (for definitions regarding aircraft generations see endnotes[16]). This ratio is gradually improving and will continue to do so in the future, as the older generation aircraft are replaced and more J-10s, J-11s and SU-30 variants come into service.

It is these aircraft that provide China's first true modern multi-role capability. It is assessed that the indigenous J-10, that the Chinese claim to have a performance similar to that of an F-16 and the Japanese F-2[18], will form the backbone of the PLAAF, with the U.S. Defence Intelligence Agency estimating a total PLAAF requirement for 1200. Currently only around 100 J-10s are in service and as Table 1 shows this means that in reality China's balance of modern aircraft with its nearest neighbours and rivals is not as healthy as it initially appears. Meanwhile, they continue to rely on the imported Russian or licence produced SU-27 and SU-30 variants for an all-weather, precision capability.

Table 1. Total combat aircraft[22]

Country	Total	Total Modern[19]
China	**3,418**[20]	**299**
U.S.	**3,652**	**3,567**[21]
Taiwan	**432**	**343**
Japan	**260**	**190**
India	**826**	**564**
South Korea	**505**	**165**

The production of an indigenously designed and built engine is an important step in China's aerospace industry, as China currently relies on engines from Russia or the U.K. (Rolls Royce). Indeed Kogan has noted that along with underdeveloped avionics and poor radar development, the engine sector has been, and still is, the single weakest element to hamper the Chinese aviation industry.[26] Although in some cases these systems have been in development for two decades or more (JH-7 & J-10 for example)[27] the introduction of these aircraft, systems and weapons allows the PLAAF to begin to achieve it goals of

'speeding up its transition from territorial air defense to both offensive and defensive operations, and increasing its capabilities in the areas of air strike, air and missile defence, early warning and reconnaissance, and strategic projection.'[28]

What is clear is that although this transformation is occurring quickly, inherent weaknesses are still evident. Despite the acquisition of these newer aircraft a central weakness remains the inability to project power effectively due to a lack of aerial refuelling capabilities

Fig 2 FC-1 multi-role fighter[25]

and more importantly an airborne warning and control aircraft (AWAC).[29] This lack of an AWAC capability is one of the major problems facing the PLA.[30] In the late 1990's, China attempted to purchase 4 highly capable Phalcon AWAC aircraft from Israel, in an effort to rectivy this problem, but this deal collapsed in 2000 after heavy political pressure from the U.S.[31] China has subsequently tried to develop its own AWAC system, the KJ-2000, based on the Russian A-50 platform. However, this programme suffered a major setback when one of the two development aircraft crashed in June 2006.[32] As work continues on this programme, it is possible that four aircraft have now had fixed AWACs radomes fitted. At the same time, efforts have been ongoing to configure the Y-8 medium transport aircraft into an AWAC platform along similar lines to the Swedish active phased-array Erieye system.[33] When fully operational, these systems will substantially increase the PLA's ability to conduct aerial surveillance and co-ordinate and direct offensive and defensive air and naval operations.[34]

Until then, China will have to rely on its rigid ground control system and would, therefore, be at a distinct disadvantage if encountering an integrated, AWAC equipped opponent. The U.S., Taiwan and Japan all operate highly advanced AWAC aircraft.[35]

China is also making a major effort to improve its air-to-air refuelling capacity. Although the PLAAF currently has 10 HY-6 refuelling aircraft, which are based on the H-6 bomber, these have seen little use in the past. However, a contract was signed with Russia in 2005 to provide 8 IL-78M tankers that would support the SU-30 variants. Indeed, for some time SU-30 training has been reported to include tanker training in Russia to familiarise operating with the IL-78M.[36] These improved capabilities are fundamental to China if it wants to fulfil its goal of transforming its military capabilities into a credible regional military power. Both the refuelling and the AWACs programme have raised concern, particularly in the U.S., as they would allow China to conduct extended air operations well into the South China Sea.[37]

Future Developments

Since the end of the Cold War there has been more research and development activity into fighter aircraft in China than anywhere else in the world. Today, China is perhaps the only country believed to be undertaking the development of six different types of aircraft.[38] Integrated into the policy of

'improving the innovation mechanism for defense-related science and technology, and weaponry and equipment to support the independent, leapfrogging and sustainable development of new and high-tech weaponry and equipment,'[39]

China may be developing as many as three 5th generation aircraft.[40] The most mature of these is the XJ-1 (or J-X) fighter project, which is tipped to be the most modern aircraft to be developed by China. Kondapalli reports somewhat optimistically that the Xinjian-1 (XJ-1) would be in the same class as that of the American F-22 aircraft and would also have stealth features. According to the U.S. Office of Naval Intelligence, the XJ-1 project could come to fruition in about 2015, although given how poor China's past record has been with the J-10 and JH-7, this is unlikely.[41] This does however raise a number of significant issues. Firstly, although China is keen to receive technological assistance from Russia, it is not participating in the development of the joint Russian/ Indian, multi-role 5th generation aircraft.[42] This means that outside of the U.S., China will be the only country that will be unilaterally developing multiple 5th generation aircraft, a fact that is testament to recent improvements in China's aerospace industry. Secondly, if the XJ-1 does enter service by 2015, then it will still be far behind the U.S. in terms of introducing a first 5th generation aircraft.

As has been shown by the purchase of Russian aircraft, China is happy to look abroad to fill capability gaps whilst waiting for new systems to be introduced. Numerous reports contend that China is prepared to purchase 210 Mirage-2000 fighter-bombers from France as soon as the EU arms embargo is lifted.[43] There has also been interest in buying the Tu-22 Backfire strategic bomber from Russia whilst waiting for an indigenous long-range strike capability to develop.[44] Indigenous development of UAVs and UCAVs is ongoing whilst the external acquisition of both, particularly the Harpy UCAV from Israel, has expanded China's options for long-range reconnaissance and strike.[45]

Fig 3 Concept Chinese UCAV – 'Anjian' (Dark Sword)[46]

Training

Although Chinese aircraft are armed with an increasingly sophisticated array of air-to-air and air-to-surface weapons, satellite and laser guided precision munitions and cruise missiles, Chinese military analysts are well aware that military strength is not just about technology.[47] Training and doctrine are also of fundamental importance. There is no doubt that the both the PLA in general and the PLAAF in particular will have to make substantial changes in their operating procedures to be able to use more technologically sophisticated military equipment in an effective manner.[48] Key to these changes will be an improvement in training. The recent Defence White Paper notes that the PLAAF:

'stresses mission-oriented and confrontational training, increasing combined tactical training of different arms and aircraft types, and conducts training in flying refitted new aircraft and using new

weaponry and equipment in an active and stable way.'[49]

However, it will take a considerable period of time for China to catch up with its regional rivals and in doing so it will face a number of challenges. Although SU-27 and SU-30 pilots may fly around 180 hours per year, which is broadly equivalent to Western standards, pilots of older aircraft may see as little as 80 hours flying time.[50] Much of this flying is also basic in nature and is coupled with a reliance on a system of rigid ground control which discourages initiative and autonomy on the part of aircrew.[51] The result is that, although demonstrating that some lessons of the Gulf War had been identified,[52] the SU-27s performed poorly during the 1996 Taiwan crisis.[53] More recently, following a Sino-Russian joint exercise in 2005, the Russians were unimpressed with China's skills and particularly a lack of jointness and communication.[54] Conditions are improving, however, with reports that the PLAAF are using "Blue Team" squadrons to improve realism and are conducting more complicated day and night sorties[55], although these have only become common recently.[56] China is also pursuing more regular exercises with Russia and is seeking a first multilateral military exercise with the 10 member Association of Southeast Asian Nations (ASEAN) as well as continued exercises with the Shanghai Cooperation Organisation (SCO).[57] These steps, coupled with the introduction of modern jet training aircraft and simulators, will rapidly help to improve the standard and war fighting ability of the PLAAF. One thing that China cannot replicate though is invaluable operational experience. There can be very few pilots remaining who have any wartime experience in the PLAAF. In contrast, the U.S. has been conducting combat operations in all spectrums throughout the last 17 years, building up an indispensable breadth of experience across all ranks.

Naval Air Power

China's naval air forces, the impressively named Peoples Liberation Army Naval Air Force (PLANAF), are also an important repository of Chinese air power. Consisting of around 792 combat capable aircraft[58], many in an anti-ship role (including 48 SU-30MK2, China's most advanced aircraft), this force is central to China's anti-access strategies out to the Second Island Chain and the PLAN's 'active defence' doctrine.[59] As China rapidly expands its Navy into a blue water fleet, speculation mounts as to whether it is building an aircraft carrier or not. The aircraft carrier is one of the most potent symbols of national strength and a key power projection asset. China is currently the only permanent member of the UN Security Council not to possess such a capability. Even its regional rivals, India and Thailand, possess aircraft carriers, much to China's chagrin. Additionally, India is in the process of receiving into service a former Russian carrier whilst at the same time building a second carrier indigenously[60]. The recent deployment of an Indian carrier fleet to the Straits of Malacca highlighted to China just how far behind it is in this area. The acquisition of a carrier capability has been a longstanding intention of China and speculation is mounting that these efforts are intensifying.[61] In October 2006 Lieutenant General Wang Zhiyuan, Vice Chairman of the Science and Technology Commission of the PLA's General Armament Department stated that the:

'Chinese army will study how to manufacture aircraft carriers so that we can develop our own…[A]ircraft carriers are indispensable if we want to protect our interests in oceans.'[62]

An indigenous carrier research programme of some scale has been ongoing for a number of years. It began in 1985 with the purchase of the WWII British built, Australian carrier, HMAS Melbourne, which was intensively studied and a mock up of the deck built on land to practise landings.[63] A Chinese scrap concern also purchased a mothballed Essex class carrier from a U.S. east coast yard.[64] Having failed in negotiations with a Spanish company to purchase two carriers, in 1996 China enquired about the possibility of purchasing the retiring French aircraft carrier Clemenceau.[65] Although unsuccessful, China was subsequently able to buy three former Soviet carriers, the Kiev class Minsk and Kiev from Russia in 1998 and 2000 respectively, and the incomplete Kuznetzov class Varyag from Ukraine, also in 1998.[66] Both of the Kiev class carriers have been made into theme parks after study, but it is the Varyag that has provoked significant interest. Recent refurbishment work on the ship, including the painting of PLAN markings, and reported interest in purchasing the SU-33 naval fighter from Russia have rekindled debate about a Chinese carrier fleet.[67] It is possible that the Varyag could be made fully operational, but what seems more likely is that it will be used for training and testing while an indigenous carrier is built. It is assessed that the likely route that the PLAN have adopted is to build two or possibly three medium-sized carriers (roughly 40,000-60,000) tonnes, but these are unlikely to enter service before 2018, although some analysts think an operational carrier is a possibility as early as 2015.[68] Although these dates are optimistic, what is clear is that a carrier of some sort is coming and when it arrives, will provide China with a power projection capability beyond the First Island Chain. In the words of Hempson-Jones & Chen:

'The question is not 'if' the Chinese are building this power projection capability, but 'when'.[69]

Space and Counterspace

A recent People's Liberation Army Daily and National Defence News article argued that "information dominance cannot be separated from space dominance. We can say that seizing space dominance is the basis for winning informationalized war."[70] Learning from the impressive U.S. military campaigns of the past 20 years, recent PLA writings highlight the importance of information dominance in fighting modern wars. It has been recognised that because of the reliance on space systems for the collection, transmission, dissemination and application of this information, information dominance requires space dominance. Otherwise the ability to undertake the kinds of operations needed to win such a war would be compromised. As a result, China is estimated to be developing around 15 types of satellites that include imagery reconnaissance, electronic intelligence and signals intelligence reconnaissance satellites; small and micro-sized satellites for imagery, navigation and communication roles; and anti-satellite weapons.[71] China's current array of space systems are primarily intended to facilitate national economic growth, but do contain important dual use capabilities that support the PLA

requirements that Cheng notes as including:

i. The ability to find enemy forces

ii. The ability to coordinate one's own forces, which may be multi-service

iii. The ability to locate and move one's own forces to within reach of the enemy

iv. The ability to undertake precision, long range strikes against the enemy, assess the results, and either sustain those attacks or move on to new targets[72]

The dual use of China's space programme is not preventing them from developing the systems that are assessed as necessary for winning informationalized war. For example advanced imagery, reconnaissance and Earth resource systems that may be used for disaster relief can readily provide data of military use. China has also launched four BeiDou navigation satellites that have an accuracy of 20m over China and surrounding areas whilst at the same time utilising GPS and GLONASS and investing in the EU's Galileo system. It is assessed that China may have a requirement for as many as 200 military, civilian and dual use satellites in the first two decades of the Twenty-First Century. The PLA is also heavily involved in the lunar programme as well as the ongoing Shenzhou manned space flight enterprise. Many of the developed systems could be put to military use. [73]

Having noted that space based systems are vital in modern war, the PLA have also concluded that U.S. space-based systems are vulnerable to attack, as a Liberation Army Daily article shows:

'Currently, space systems have increasingly become systems in which countries key interests lie. If an anti-satellite weapon destroys a space system in a future war, the destruction will have dealt a blow to the side that owns and uses the space system, stripped it of space supremacy, and weakened its supremacy in conducting information warfare, and even its supremacy in the war at large. Anti-satellite weapons that can be developed at low cost and that can strike at the enemy's enormously expensive yet vulnerable space system will become an important option for the majority of medium-sized and small countries with fragile space technology.'[74]

As the destruction of a low earth orbit satellite with a direct ascent anti-satellite (ASAT) weapon in January 2007 demonstrated, China already has this ability. It appears that this test was part of a larger effort to develop a range of ASAT capabilities including ground based lasers and jammers,[75] in an effort to generate the capacity to deny others access to outer space.[76] These measures have caused considerable concern particularly in the United States, where the Institute for National Strategic Studies (INSS) has noted that China may potentially be able disrupt higher orbiting satellites including GPS, which would significantly affect most U.S. military operations in the Pacific.[77] As Neill has observed:

'…the Chinese space programme, or Project 921 as it is fondly known to the PLA, has far more significant implications beyond simply propaganda value and national prestige for the People's Republic, and has long-reaching consequences for the global space industry and international security.'[78]

While the Chinese achievements in space have been impressive much of the PLA's new doctrine remains aspirational as Shambaugh, when examining the modernization of China's military in 2002, concluded:

'In sum, there remains a large gap between theory and aspirations of the PLA's new doctrine of fighting 'limited wars under high-technology conditions' and its actual capabilities.'[79]

With the doctrine having evolved to 'limited wars under conditions of informationization', it would be fair to apply the same statement in 2008. However, the improvements that have been made in China's burgeoning air power capabilities and the speed of that transformation have been startling indeed and show no sign of abating, as long as economic growth continues. Only 10 years ago, the PLAAF was a large, cumbersome, and obsolete air force with only small numbers of modern aircraft. Today with 300 modern multi-role aircraft China, for the first time, possesses a sophisticated, all- weather, precision strike capability along with a defensive and offensive counter-air capability. China's aerospace industry is growing rapidly and is currently developing 5th generation aircraft and a wide range of space-based platforms. As this growing capability is integrated with improved training, AWACs and the improved space-based systems, China's status as a regional military power will grow. The original goal was to be capable of winning informationized wars by the mid Twenty-First Century.[80] China is indeed making steady progress in that direction. In the meantime, although far behind the U.S. in terms of overall air power capabilities, it is clear that China's current air power assets could play a significant role in influencing a number of regional scenarios.

THE APPLICATION OF CHINA'S AIR POWER

'To uphold world peace, promote common development and seek cooperation and win-win is the common wish of the people around the world and an irresistible trend of our times. Committed to peace, development and cooperation, China pursues a road of peaceful development, and endeavours to build, together with other countries, a harmonious world of enduring peace and common prosperity.'[81]

Mulvenon notes that China has currently four key national security goals, all of which are subsumed within the desire for a peaceful rise. The first goal is to ensure the survival of the Chinese Communist Party (CCP) regime and maintain political stability and national unity. Closely tied into this is the second goal of maintaining the current high rates of economic growth upon which the CCP's legitimacy now relies. Thirdly is the need to prevent Taiwan from permanently separating from the mainland. Finally, increasing China's 'comprehensive national power', which includes economic, diplomatic, political and soft power options, as well as military growth.[82] China has recognised that states no longer need to pursue military conquest to prosper and that in theory, trade and economic integration pave a surer path to growth. Beijing has noted how much adhering to this philosophy helped Japan and Germany emerge from the ruins of World War II.[83] However, a peaceful rise may only be possible if these four key goals are successfully balanced. The PLA's conception of Chinese national security and national interests is not

necessarily synonymous with that of the senior political leadership, although it is broadly similar.[84] The PLA remains inextricably linked to the foreign policy decision making process and internal methods of economic development and political control[85]. Chinese military strategists consistently emphasise the need to maintain three 'conditions' for China to survive and prosper. These are national unity, stability and sovereignty. Accordingly, the PLA's threat perceptions and strategic planning are configured to maintain these conditions.[86] These themes are echoed in the 2006 Defence White Paper:

'China's national defense, in keeping with and contributing to the country's development and security strategies, aims at maintaining national security and unity, and ensuring the realization of the goal of building a moderately prosperous society in an all-round way.'[87]

These strategic goals are important as they drive current and future procurement and doctrine. If the PLA's strategic planning and threat perceptions can be understood then the air power procurement programmes and capabilities discussed above can be put in context, providing an insight as to how the PLA thinks that China's air power may be employed in the future. The most important threats for the PLA that will be discussed are:

i. U.S. military and foreign policies particularly in relation to Taiwan.

ii. Japan's re-emergence as a regional military power.

iii. India's growing military power and regional influence.

iv. Border and coastal defence including territorial waters and airspace.[88]

The United States & Taiwan

'Taiwan independence means war and separation will lead to no peace…the People's Liberation Army's millions of troops stand in combat readiness, are on high alert, and will never allow and sit idly by for any attempt to split China to succeed…We will adopt all measures to firmly crush any attempts to divide China and will realize the complete reunification of the motherland.'[89]

Clearly Taiwan is at the top of the PLA's list of potential tensions and possible conflicts. The central development of all the near term modernisation that we have seen is to acquire capabilities to allow the PLA to secure a quick and decisive victory against Taiwan, while deterring U.S. intervention.[90] Mulvenon notes that China's goal of preventing Taiwan's permanent formal separation from the mainland will probably have a greater impact on Beijing's defence modernization than any other national security goal.[91] After 1996, China recognised that any potential conflict over Taiwan could also involve the United States and therefore, this is where recent improvements have been aimed, particularly in those capabilities that would deter U.S. intervention and prevent deployment of their forces into the region (anti-access capabilities).

Until very recently, it has been thought thought, and many still believe, that China, despite recent transformation, lacks the ability to physically capture the island of Taiwan. Furthermore, many experts believe it will be several years before the PRC will acquire this

capability.[92] However this assessment may have to change. In 2000, a senior PLA colonel when questioned over China's ability to seize Taiwan noted that:

'We are accustomed to asymmetric war – we may not possess superiority in weapons over Taiwan, but our whole history of the PLA is to achieve victory over superior forces. The gap today is not nearly as great as in the Korean War. The PLA is not well prepared for war against Taiwan but we have never been well prepared for past wars and have always met our objectives. Our capabilities in information warfare and electronic warfare are not that strong, but more likely are missile attacks and possibly blockades.'[93]

In the seven years since this statement, China has brought into service numerous systems or demonstrated technology that would significantly influence any conflict over Taiwan. The majority of these systems belong to the aerospace revolution. Firstly is simple air power. China already now possesses approximately 300 modern multi-role aircraft both with a precision targeting and counter air capability and intends to have at least 1200 in the long term. At the same time there are increasing numbers of special mission aircraft, UAVs and UCAVs, including the anti-radiation Harpy, which would be effective at suppressing Taiwan's air defence radars. In any conflict, PLA air defence would play a key role:

'PLA air defence has shifted from point defence of key military, industrial and political targets to a new Joint Anti-Air Raid Campaign based on a modern integrated air defence system and offensive and defensive counter-air operations. These operations extend beyond the defence of Chinese airspace to include strikes against an adversaries bases (including aircraft carriers) and logistics to degrade the adversary's ability to conduct air operations.'[94]

It is likely that any attack on Taiwan would open with an attack against airfields and air defence sites not only with aircraft, UCAVs and cruise missiles, but also with ballistic missiles. China has more than 900 in garrisons opposite Taiwan alone, and these are increasing at almost 100 per year[95]. The integration of these missiles with indigenous satellite navigation systems such as BeiDous renders Taiwanese airbases extremely vulnerable and is a qualitative increase in threat. Ballistic and cruise missiles would also form, along with submarines, the cornerstone of the anti-access missions that would try to ensure that the U.S. could not intervene without significant cost. SU-30MK2 Flankers equipped with advanced anti-ship missiles would also be crucial in this regard. New air defence systems, including the S-300PMU-2 and other SA-10 and SA-20 variants, would also ensure that Taiwan and, to a lesser extent, the U.S. would be unable to effectively strike back. One of NATO greatest fears during the Kosovo campaign was that somehow Milosevic would acquire and assemble an SA-10 unit near Belgrade. At the same time, China would be using its so-called 'Assassin's Mace' weapons such as its ASAT capability and technical attack (computer hacking) to disrupt communications, navigation and intelligence satellites. RAND assess that, although these measures could not defeat the U.S. militarily, it could allow China to achieve its military and political objectives, while preventing the U.S. from accomplishing some or all of its objectives.[96] One of the aims of the ASAT test in January was to signal

to America and to it allies in Asia, Taiwan and Japan in particular, that it has ways of countering the space-based technology on which the American forces rely.[97] In 2007, O'Hanlon argued that China would have to rely on surprise against Taiwan, otherwise any attack would probably fail. He does however acknowledge that China has a good chance of achieving some level of air superiority, which may be all that would be required.[98] Contrast this to his statement of 2000:

'China cannot invade Taiwan, even under its most favourable assumptions about how a conflict would unfold. Nor will it be able to do so for more than a decade, if not much longer.'[99]

What this demonstrates is how far China has come in such a relatively short period, particularly with regard to its air power capabilities. This transformation continues and as time progresses, more and more modern aircraft and systems will enter service, altering the balance further. This is especially true, considering that Taiwan's defence budget has been falling in recent years. However, it is still to be seen as to whether the PLA, and the PLAAF in particular, could successfully coordinate and mount such a large-scale operation, it has yet to attempt it in training.

Japan

PLA analysts have begun to pay increasing attention to Japan. As noted in the 2006 Defence White Paper:

'The United States and Japan are strengthening their military alliance in pursuit of operational integration. Japan seeks to revise its constitution and exercise collective self-defense. Its military posture is becoming more external-oriented.'[100]

History still casts a shadow over Sino-Japanese relations and tensions have been fuelled by rising nationalism within the PLA[101] such that:

'The anti-Japanese sentiment one encounters among the PLA at all levels is palpable. Distrust of Japan runs deep, transcends generations, and is virulent among a generation of PLA officers in their fifties and sixties.'[102]

Of particular concern for the PLA at present is what they see as Japanese defence policy shifting from being locally to regionally directed and from passive to active defence.[103] The creation of a cabinet level Ministry of Defence in 2007 (for the first time since 1945) coupled with the ongoing pursuit of closer integration with the United States and the procurement of new offensive air and naval platforms continues to cause alarm[104]. Some in the PLA see this as a 'contain the China threat strategy.' In a recent exercise with U.S. forces, Japanese F-2 aircraft, their latest fighters, flew 1,700 miles from Northern Japan to Guam to drop live bombs on a range, a major step for a country that allows forces only for defence. Although perhaps designed to send a signal to North Korea, it is safe to assume that China was watching closely. Japan is also acquiring four air-to-air refuelling tankers and two helicopter carriers that will enable them to project power much further. Japan has also repeatedly expressed a desire to purchase the F-22 from the U.S., which would give it a qualitative edge over all its regional rivals, including China in the short term. Japan houses a number of American bases and is also a partner in the Theatre Missile Defence programme (TMD). As a consequence, Japan could potentially be dragged into

Fig.4 The First and Second Island Chains[106]

any Taiwan conflict, if, for example, the country is struck as part of any Chinese Joint Anti-Air Raid Campaign. Based on offensive and defensive counter-air operations, these operations extend beyond the defence of Chinese airspace to include strikes (by aircraft or missiles) against an adversaries bases (including aircraft carriers) and logistics, to degrade the adversary's ability to conduct air operations.[105] Chinese anti-access strategies aimed at preventing U.S. interference in any Taiwan campaign could also involve projecting naval and air power out to the Second Island Chain (with the SU-30 armed with anti-ship missiles for example), which would take them right up to Japan.

The potential for an incident, deliberate or accidental, on either side would be considerable and almost inevitable. China also has an ongoing dispute with Japan over the Diaoyutai/Senkaku islands[107] and has shown its willingness in the past to forcefully assert its territorial claims.[108] Again, Chinese naval air power and, in the future, any aircraft carrier would play a large part in any such incident, although it has to be stated that currently, China is at a distinct disadvantage against Japan's large modern navy.

India

China has long seen India as a regional rival and even fought a war over the disputed border in 1962. Despite the 2005 visit to India by Premier Wen, in which principles were agreed to guide a final settlement,[109] the PLA still looks upon India as a threat. This perception was heightened after the 1998 nuclear tests, especially when there were noises from within India about them being aimed at China.[110] Economic conflict seems likely, with the world's two largest countries with the two fastest growing economies competing globally for the same resources. Some commentators argue that it will be India that will outstrip China in the long run.[111] Another bone of contention are the sea-lanes of communication in the Indian Ocean and straits of Malacca, along which eighty per cent of China's external commerce and the majority of its oil are carried.[112]

President Hu Jintao has called this China's 'Malacca Dilemma', a point that was emphasised with the recent Indian deployment of a carrier group into the Straits. As already noted, this has fuelled China's desire for its own carrier capability. It has also prompted China to seek naval bases in Pakistan and Myanmar that could provoke tensions in the future. The PLA has also looked on enviously as India's armed forces have modernised and worked through many of the issues that China is currently struggling with, particularly AWACs and refuelling aircraft for example. India also enjoys the advantage of being able to buy Western as well as Russian equipment. As with its concerns with Japan, China is also concerned at increasing U.S.-Indian military ties, which some in the PLA have begun to view as increasingly aimed at containment.[113]

Border and coastal defence including airspace and territorial waters

China also faces a number of potential disputes over territory, including both airspace and territorial waters. For example, China is in rivalry in the South China Sea with Vietnam, over the Paracel Islands, and with Vietnam and the Philippines over the Spratly islands[114]. Protecting China's airspace has long been a concern of the PLA, and it was whilst defending this airspace that the EP-3 incident occurred in 2001. An incident such as this is perhaps where we will next be given an indication as to how far China's air power capabilities have developed. PLA literature on defending Chinese sovereignty often mentions territorial claims in the South China Sea as one of its key areas of responsibility and this is highlighted in the Defence White Paper of 2006.

CONCLUSION

In 2008, it is clear that air power (perhaps we really should call it aerospace power) is of fundamental importance. Not only is it the primary method of inflicting casualties and material damage upon a foe, it has also become, for certain states, a foreign policy tool of choice. It plays a key role in gaining information superiority, which is of critical importance for winning modern wars in the contemporary environment. According to the PLA's assessments of recent wars, the key to victory lies in the ability to gain and exploit information, while denying an opponent the same ability.[115] China has watched these developments and realised that to become a credible regional military power it has to transform its military and fast. In 2002, Shambaugh noted, in regard to the events of 1991, 1996, 1999 and 2001/2, that:

'Not only was the PLA High Command thus obliged to witness a series of powerful demonstrations of modern military prowess, but it also had to reflect on the prospect that, while it was trying to upgrade its equipment from the 1960s to the 1970s, and its doctrine from the 1980s to the 1990s, the already impressive American military of the late twentieth century was on the verge of a significant leap forward into the twenty-first century.'[116]

In an effort to close the gap, China has been attempting its own leap forward as it attempts to build a force that will enable it to fight and win local wars under conditions of informationization. It has made massive progress in this regard, particularly in the aerospace power arena. China is currently developing more aircraft than any other country and is rapidly bring into

service modern multi-role aircraft and improving training and doctrine. In as little as ten years China could have its own 5th generation aircraft and new aircraft carriers. It is also working hard to improve its already impressive space-based capabilities. However, China still lags behind in some crucial areas. The lack of an AWAC platform puts China at a real disadvantage, especially if it were to come up against any of its regional and global rivals, particularly the U.S. Command and control also remains poor, so that co-ordinating any large-scale joint operation would currently pose considerable challenges. As a result, by utilising its burgeoning aerospace power capabilities, China would be able to significantly influence any regional scenarios, but perhaps not decisively. In any potential Taiwan conflict, China would need to achieve total surprise, particularly from the U.S., to have a chance of succeeding. If this could be achieved and the U.S. prevented from interfering through anti-access strategies, then China could achieve its goals. However, although its anti-access capabilities are improving, it is unlikely that China could militarily prevent U.S. carrier groups from getting involved without using nuclear weapons. Japan also currently holds a qualitative edge over China in naval terms and could gain a significant air power advantage, in the short term, it if manages to purchase the F-22 from the U.S. India, although lagging behind in terms of its indigenous aerospace industry, is currently ahead of China in operational air and naval air power, and China is unable to defend its vital sea-lanes of communication as a result. On this basis, it has to be argued then that, based on its air power capabilities, China is currently a credible regional military power but is not yet a great power. However, the progress that China has made in the last ten years has been stunning, particularly in the aerospace environment. China's goal is to be able to fight and win local wars under conditions of informationization by the middle of the 21st century, and it is currently on course to do so. Three fundamental questions arise. Firstly, can China's military maintain this growth in capability and development? Secondly, will its regional rivals be able to keep up? Finally, and perhaps most importantly, how far ahead will the U.S. be able to stay?

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RAF Venoms were used to destroy rebel strong points using their considerable fire power

The Jebel Akhdar War

The Royal Air Force in Oman 1952-1959

By Air Vice-Marshal Peter Dye

The dismemberment of the Ottoman Empire, following Turkey's defeat in the First World War, triggered the creation of states and international boundaries where none existed before. The straight lines that defined the new political map of the Middle East reflected the handiwork of cartographers rather than geographers or historians. The price for this externally imposed order has been a century of internal unrest – exacerbated by the region's strategic importance, as the main source of the West's oil supplies – and a succession of inter-state conflicts that have attracted rival sponsors engaged in wider political and ideological struggles.

It is possible to regard both the Jebel Akhdar War, and the subsequent Dhofar Campaign, as proxy conflicts of the Cold War – this was certainly the contemporary perspective – but in reality they drew on deeper grievances caused by poor governance, deprivation and economic disparity. To this unfortunate mixture one might also add feudal values, tribal rivalries and the long standing distrust between the interior (Oman) and the coastal towns (Muscat).

Jebel Akhdar

The interior of Oman is dominated by the massive plateau of Jebel Akhdar (Green Mountain) that lies some 80 miles to the southwest of Muscat, the capital city and main port of Oman. It is neither green, nor a single mountain, but a large grey-brown massif covering more than 700 square miles with individual peaks rising to nearly 10,000 feet. It is home to around 58 separate villages and over 700 wadis. Until the construction of roads, it took a 6 hour climb, up a near vertical path, to reach the main plateau at 6,000 feet. The tribes of the area have always been fiercely independent and have successfully defied invaders for centuries.

The rebellion began in 1954 and was, in essence, a power struggle between the Sultan and the tribes of the interior – driven by the prospect of substantial oil reserves. The uprising was quickly suppressed by the Sultan's forces but two years later the rebellion flared up again. With money, training and arms provided by Saudi Arabia, and the vocal support of Egypt, it looked as if control of the interior might be wrested from the Sultan. In the end, the rebels were defeated, but only with British assistance and after an 18 month campaign involving the extensive use of air power, including the employment of air control techniques developed and refined by the Royal Air Force [RAF] in Iraq and Aden over the previous 30 years.[1]

The final assault on Jebel Akhdar was carried out by the Special Air Service [SAS] under extremely difficult and hazardous conditions. This redoubtable feat of arms almost certainly saved the Regiment from disbandment but it also overshadowed the achievements of the RAF in carrying out some 2,000 offensive sorties with just a handful of aircraft – avoiding the need to employ substantial ground forces. The Jebel Akhdar War is now little remembered, but it remains an impressive and instructive example of what joint operations can achieve with modest resources but with clear, consistent and fully aligned military and political strategies. This paper will outline the background to the campaign, describe the role of air power in defeating the rebels and identify the lessons of continuing relevance for counter-insurgency operations.

The Buraimi Dispute

The immediate cause of the fighting in Oman was the longstanding determination of Saudi Arabia to revise her frontiers and extend her influence in south-east Arabia. After the Second

World War these ambitions focussed on the Buraimi Oasis (comprising 8 villages, with a population of about 25,000, 200 miles to the northwest of Muscat) where there was the prospect of significant oil reserves and a history of disputed sovereignty. In 1952 a small armed party from Saudi Arabia occupied one of the villages and refused to withdraw despite protests.[2] The Sultan raised an army of some 8,000 tribesmen to expel the invaders, but was deterred from taking action by the British Government, who hoped to achieve a peaceful solution through the ongoing Anglo-Saudi boundary negotiations.[3] A show of force by 3 Vampires from RAF Sharjah and the deployment of 100 Trucial Oman Scouts, failed to move the Saudis - although the low flying aircraft and leaflet drops brought strong protests about British intimidation and aggression.

A stalemate ensued with the British anxious to avoid confrontation but willing to show support for the Sultan by increasing the ground and air forces in the area, including the loan of 400 Aden Protectorate Levies and two flights of RAF armoured cars.[4] This had little noticeable effect on the negotiations and by early 1953 it was evident that something else was needed. In the belief that a settlement was still possible, an aerial blockade was initiated to put additional pressure on the Saudi garrison. There were only a limited number of tracks converging on the Oasis and it proved possible to detect approaching caravans out to several hundred miles; using the Trucial Oman Scouts and RAF armoured cars to intercept any suspicious movements. The Vampires at Sharjah were accordingly replaced by Lancasters which had the necessary range and endurance to maintain the blockade. The RAF's visible presence also served to encourage those tribes that preferred to remain loyal to the Sultan. It was tedious work, however, involving low level flying in extremely high temperatures with the risk of severe turbulence. More worryingly, a number of incidents between dissident tribes and the Levies revealed Whitehall's continuing reluctance to authorise live ammunition or the dropping of warning bombs. The RAF's preference was to use the traditional methods of air proscription: leaflet warnings about continued misconduct; further warnings to permit safe evacuation; and the destruction of selected targets (generally villages or fortified towers). The Air Staff protested that:

'There will be no solution to this frontier problem in south-eastern Arabia as long as we are denied the opportunity to exercise our proper and well tried methods of air control. In the meantime, we are committed to the present protracted and ineffective aerial reconnaissance to which there is no end in sight'[5]

The Air Staff may, therefore, have been encouraged by a Time Magazine report that described the RAF's efforts as a 'sort of comic-opera blockade'.[6] The efforts to isolate the Saudis continued through the remainder of 1953, the only change being the replacement of the Lancasters by a flight of six, unarmed, Anson communications aircraft. Eventually, in the summer of 1954, the Anglo-Saudi negotiations produced an outcome. It was agreed that Buraimi and all other disputed territory would be evacuated – other than a small police force from both sides – pending the outcome of a joint arbitration tribunal. The aerial blockade was lifted and the RAF presence at Sharjah reduced to a small detachment.

In due course, British frustration at the slow process of the arbitration process and a suspicion that the Saudis

were covertly reinforcing their police presence led to an air/land operation in October 1955 to expel them. The RAF provided Lincoln heavy bombers as well as transport aircraft to move in the necessary ground forces. Full control of the Oasis was achieved at the cost of just 9 casualties.

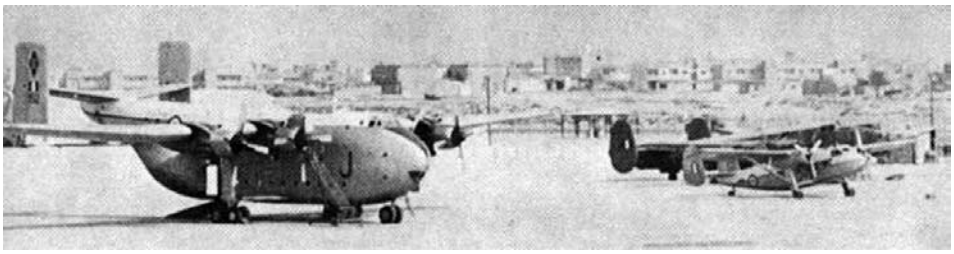
Although the Buraimi affair had apparently been successfully concluded, the British Government - sensitive to international opinion and wary of intervention by the United Nations – had shown itself reluctant to employ force of arms in support of its treaty obligations. In the process, it had done little to enhance the Sultan's authority and, arguably, had merely exposed the frailty of his position. More importantly, none of this had dented Saudi ambitions.

The Dispute in Central Oman

The territory of Muscat and Oman has not always been a single state; moreover, as we have seen, its external boundaries were not well defined. Although Muscat dominates the coastal periphery, the tribes of the interior have generally regarded their spiritual leader, the Imam, based in Nizwa, as having greater authority. It was only in 1920 that the Sultan of Muscat was formally recognised as having authority throughout Muscat and Oman.[7] When the Imam died in May 1954, a successor Ghalib bin Ali was appointed without reference to the Sultan. Ghalib's brother, Talib bin Ali, had ambitions to break free of the Sultan's control and established links with both Egypt and Saudi Arabia. One of Ghalib's first actions was to declare the oil concessions granted by the Sultan as invalid. Meanwhile, an Imamate office was opened in Cairo pending admission to the Arab League.

When the Saudis were finally ejected from Buraimi in October 1955, the Sultan decided to act against the Imam. In early December he ordered the Muscat and Oman Field Force [MOFF] to occupy Ibri.[8] No resistance was offered to the motorised column which then moved quickly to occupy Bahla, Rustaq and finally Nizwa. The Sultan himself travelled to Nizwa to accept homage from the tribes and to announce that the office of Imam had been abolished. Ghalib was allowed to return to his home village although his brother Talib evaded capture. The immediate threat posed by the Imam's ambitions had been removed, but the Sultan still left a small garrison of the MOFF in the Nizwa area to ensure future good behaviour. Meanwhile, Talib found refuge in Saudi Arabia where over the course of the next year he assembled, trained and armed several hundred supporters who would eventually form the basis of an Omani Liberation Army.

The 1956 Suez crisis did not impact directly on Oman, but the weakening of British authority across the Middle East provided encouragement to those determined to challenge existing borders or bent on overthrowing the old order. On 14 June 1957, Talib and about 200 heavily armed followers landed at two locations on the coast near Muscat.[9] Joining up with Ghalib, the brothers travelled to Wadi Ali in the shadow of the Jebel Akhdar, where the white flag of revolt was raised. Other leaders rushed to join them, including Suleiman bin Himayer, the 'Lord of the Green Mountain', and chief of the Bani Riyam tribe who lived on Jebel Akhdar and in the surrounding villages.[10] The MOFF tried to arrest Talib but were quickly



RAF Station Sharjah was one of the most important British assets in the Middle East during the 1950s. Seen here on the ramp (from left to right) are a Beverley of No 30 Squadron, a Twin Pioneer of No 152 Squadron and a Shackleton of No 37 Squadron

forced to withdraw under constant attack, suffering heavy casualties and losing most of their vehicles in the process. Nizwa itself fell to the rebels on 17 July.

Talib's rebellion had been intended to form one of two simultaneous uprisings, the second being in the Sharqiyah area east of the Jebel and south of Muscat. In the event, Talib arrived later than planned by which time the Sultan had imprisoned the Sharqiyah rebels. Although the situation might therefore have been a lot worse (from the Sultan's perspective), the defeat of the MOFF meant that there was little chance that the Sultan could deal with Talib on his own. Accordingly, he called on the British Government for help.[11] Given the very real danger that the Sultan would lose control of the interior – with serious implications for the entire region – the Government agreed to his request. To avoid wider diplomatic repercussions, it was decided to move quickly, but with minimum force. Three companies of 1st Battalion, The Cameronians, were immediately flown in by the RAF (including one company recalled from Kenya) while a fourth company was placed at 24 hours readiness to move. Three frigates were diverted to the Gulf, to prevent any further reinforcement of the rebels by sea, while Venom fighters and Shackleton maritime bombers, together with Beverley, Hastings, Pembroke and Valetta transport aircraft, were deployed forward to Bahrain and Sharjah.

The plan was to use air power to weaken the rebel resolve sufficient to allow the Sultan's forces to re-occupy the area. Under Operation BLACK MAGIC, the region to the south of Jebel Akhdar (centred on Nizwa) was formally proscribed.[12] Proscription was, in effect, an inwards blockade that denied the inhabitants of the proscribed towns or villages the opportunity to travel or to work in their fields during daylight hours – on pain of attack. It aimed to disrupt agriculture and trade to such an extent that the tribes would capitulate. To achieve effect, it required a permanent air presence and the willingness to employ force when the proscription was broken.

The first phase, commencing on 19 July, involved intensive photographic and visual reconnaissance to identify the extent of the rebel area and their strongholds (noting those villages not flying the Sultan's red flag while recognising that white flags might indicate surrender rather than rebellion)! Much of the existing mapping was found inaccurate or misleading and provided no reliable information on tracks, watering holes or

spot heights. Although the proscribed area was over 350 miles from Bahrain, and 220 miles from Sharjah, the long endurance of the Shackletons enabled at least one aircraft to be constantly overhead during daylight hours, each mission lasting 9-10 hours.

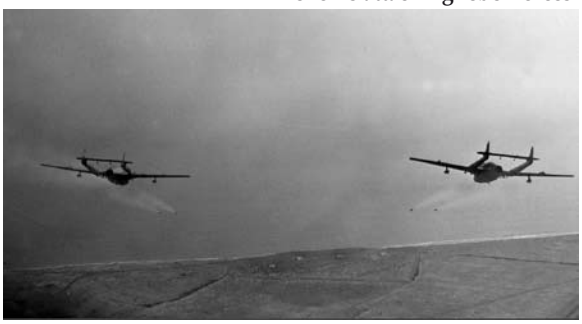
Commencing 24 July, the fortified towers at Izki, Nizwa, Tanuf, Birkat al Mawz, Bahla and Firq were attacked on successive days. Each operation, using rockets and canon fire, was preceded by warning leaflets (dropped 48 hours in advance) while further leaflets were dropped during the course of the attacks repeating the proscription requirements.[13] The fort at Izki was badly damaged by Venoms, although the thick walls of the main tower at Nizwa proved more resilient against rockets. The barracks at Firq were also heavily attacked. Little or no movement was seen, indicating that the warnings had been successful – other than two vehicles that were set on fire – but many more red flags were reported once the Venoms had departed. Regular patrols using both Venoms and Shackletons kept up the pressure on the rebels while Meteor and Canberra aircraft continued to provide photographic coverage. By now, it was estimated that Talib's forces consisted of some 1,000 dissidents concentrated in the area bounded by Nizwa, Firq, Tanuf and Bahla.

Ground operations commenced on 6 August with the Sultan's forces advancing south from Bid Bid towards Izki, while the Cameronians and Trucial Oman Scouts, together with a troop of armoured cars, advanced north from Fahud, via Izz, towards Firq. The armoured cars, with additional Land Rovers, trucks and water-bowsers, had all been flown into Fahud by the RAF, using an improvised desert strip. The summer heat was intense, as was the dust, but both columns were provided with close air support, directed by accompanying RAF air contact teams. Venoms and Shackletons were used to remove road blocks and to destroy rebel strong-points using their considerable fire power. The Venoms were armed with four 20mm cannon as well as carrying eight 3 inch rockets with a 60lb warhead while the Shackletons could drop up to 60 20lb fragmentation bombs as well as being equipped with a forward turret armed with twin 20mm cannon.

The rebels occupying Firq put up strong resistance, despite the weight of rocket and cannon fire.[14] However, a combination of day and night attacks saw the town captured on 11 August. Throughout this operation the Venom support was excellent. *'The pilots' accuracy was remarkable and they were quick to locate and attack targets that must have been difficult to spot in that bare terrain. During the attack … the Venoms operated a 'cab rank' with a small air contact team with the forward troops, whilst overhead Shackletons circled like hens watching their chicks buzzing below.'*[15]

Nizwa was captured the next day, allowing the two columns to link up at Birkat al Mawz. Unfortunately, the

RAF Venoms attacking rebel forces



3 rebel leaders, Ghalib, Talib and Suleiman had avoided the encircling columns. A new civil administration was established in Nizwa but to secure the area against further rebellion, the forts at Tanuf and Izki were demolished by setting explosive charges while the fortified towers at Sait and Ghumer were destroyed by Venom rocket fire.[16]

Unlike the long drawn out struggle at Buraimi, the Sultan's rule had been convincingly re-established in less than four weeks. Although the ring-leaders had escaped, the British Government took the opportunity to withdraw most of its forces – leaving only a few RAF aircraft at Sharjah – in the belief that the MOFF would be able to remove the last vestiges of resistance.[17]

The Siege of Jebel Akhdar

The remaining rebels, perhaps numbering no more than 600,[18] set up camp in the vicinity of Saiq, on the southern side of the Jebel.[19] Numerous large caves were to be found in the limestone which provided natural shelters against bombing or rocket attack. The plateau was bounded by vertical rock walls and steep escarpments cut by deep wadis which provided the only lines of communication. These were often little more than narrow paths, only passable in single file, and so steep that they could be held by just a handful of lightly armed defenders. Even without opposition, climbing the 6,000 feet to the plateau in the heat of the day represented an immense physical challenge that demanded a ready supply of water and high levels of fitness.

The first attempt to dislodge the rebels took place on 25 September when the

Shakletons now flew out of Masirah Island, some 175 miles to the south of Jebel Akhdar

Sultan's forces, assisted by a single Shackleton, advanced to within 8 miles of Saiq before being ambushed. The Shackleton was able to suppress the enemy fire, after some initial difficulty locating the rebel positions in the heavily shadowed wadi, but the patrol was still forced to retreat.

An aerial blockade was now imposed, but the size of the Jebel and the difficulty of spotting movement meant that this was much less effective than at Buraimi. Meanwhile, Talib became increasingly adventurous and moved off the Jebel on several occasions to assert his authority over the local villages and to mine the dirt roads. As a result, the area around the mountains was soon littered with wrecked vehicles.[20] A further attempt to dislodge the rebels occurred on 15 November with an attack on the village of Bani Al Habib. Full air support was provided by Venoms and Shackletons – the latter using 20lb fragmentation bombs. On one occasion, in an effort to achieve greater precision, these were dropped from below the briefed safety height leaving the Shackleton to return to Masirah with over 80 holes in the fuselage and wings.[21] The advance

continued, supported by supplies dropped by Pioneer aircraft; the Venoms using rocket and canon fire against snipers on the upper slopes. Progress slowed, however, and after a further day the attack was called off – well short of the objective.

An important development, at least for the longer term, was the visit to Oman by the Undersecretary of State for War, Julian Amery, in January 1958. Following discussions with the Sultan, it was agreed to provide additional civil and military assistance, including gifts of equipment, and to create an air force with pilots seconded from the RAF. These steps recognised the need to address the wider implications of the insurgency (both political and economic) and to provide the Sultan's Armed Forces with greater indigenous capability – something that would more than prove its worth during the Dhofar campaign.[22]

Over the next 6 months the military effort focussed on trying to tighten the aerial blockade. A 'sky-shouting' Pembroke (broadcasting aerial messages in English and Arabic, as well as a musical selection from 'High Society') was brought in, together with a leaflet dropping campaign designed to weaken Talib's support amongst the villagers. The Pembroke was of questionable value as the rebels sent a message complaining that they could not hear what was being broadcast.[23] On another occasion, the aircraft was so badly hit by small arms fire that the pilot had to make an emergency landing at Firq – after jettisoning the loudspeakers. Thereafter, 'psyops' was conducted by flying in two 5.5 inch howitzers from Aden and firing daily (but at irregular hours) on the plateau from the valley below.

The only fatality of the campaign was Flt Lt Owen Watkinson, from No 8 Squadron at Sharjah, who crashed in his Venom after pulling out of a straffing attack. His grave can still be found near the village of Saiq, with the substantial remains of his aircraft

Meanwhile, the air campaign increased in intensity, both Venoms and Shackletons being employed in a sustained programme of attacks on water supplies, crops and livestock. The Shackletons now flew out of Masirah Island, some 175 miles to the south of Jebel Akhdar. This reduced the transit time, compared to Bahrain or Sharjah, as well as allowing operations to be conducted largely out of the public eye.

Cultivation on the Jebel Akhdar plateau depended upon a system of ancient irrigation channels (falaj), including aqueducts, water tanks and dams, terraced fields and wells.[24] The use of 1,000lb bombs was authorised for the first time, but this was more challenging than it might seem as the Shackleton crews were trained in anti-submarine warfare rather than bombing. There was no reliable topographic information, making the standard bombsight ineffective. Heights had to be estimated, which greatly reduced accuracy. However, if the Shackletons

dropped lower than 8,000 feet, to ensure greater precision, they inevitably came within range of heavy small arms fire (including .5 inch Brownings).

There were few signs that Talib was ready to surrender. In fact, he grew stronger through the early part of 1958, gaining new recruits and additional weapons and money smuggled in from the coast – notwithstanding the naval and aerial blockade. In response, a further squadron of Trucial Oman Scouts and two troops of armoured cars were deployed to the area to bolster the investing forces. Air operations continued against the plateau during the course of which the RAF suffered its only fatality of the campaign when Flt Lt Owen Watkinson, from the No 8 Squadron detachment at Sharjah, crashed in his Venom after failing to pull out of a strafing attack. His grave can still be found near the village of Saiq, with the substantial remains of his aircraft.[25]

It was argued that the only solution lay in a full scale military operation. Options included a parachute descent on the plateau or a helicopter-borne assault. Both strategies looked extremely risky given the high altitude and the potential resistance.[26] The small carrying capacity of the available helicopters suggested that it would take some time to assemble a strong enough force to withstand a rebel counter-attack. The final proposal involved a 4 battalion attack on the Jebel, including a battalion-sized airborne assault, together with substantial air assets and an enhanced naval presence. Not surprisingly, given the Cabinet's reluctance to deploy any more regular units, the plan was rejected out of hand.[27]

SAS troops after securing Jebel Akhdar

Part of the explanation for this rejection, beyond political sensitivities, was growing evidence that the air operations were at last beginning to have an effect. During the week ending 12 September, Shackletons dropped 148 1,000lb bombs and the Venoms fired 40 rockets – together with large quantities of 20mm ammunition.[28] Intelligence reported casualties amongst the rebels while there were stories that some villagers had urged the Imam to surrender.

A radically different approach was now developed that envisaged a squadron of the SAS scaling the mountain to secure a route for the Sultan's forces to capture the plateau. This would involve fewer ground units, although it still demanded substantial air support. The revised proposals were formally agreed by the Chief of the Defence Staff on 13 November. The lead SAS elements actually arrived in late October, with a full squadron (80 personnel) arriving from Malaya (via Masirah) in 2 RAF Beverley transports on 18 November. During this period, there was a temporary pause in the bombing to allow negotiations to take place as Talib had indicated a desire

to surrender. It became soon clear, however, that this was merely a ruse to gain some respite from the blockade and so the air campaign recommenced on 22 November.

Patrols by the SAS started almost immediately from posts located at both the southern and northern approaches to the Jebel. The intention was to flush out the rebels and map the routes to the plateau. These patrols were largely conducted at night as moving in the heat of the day, in the face of well-concealed snipers and machine gun posts, was impractical if not suicidal.[29] Air attacks continued on known rebel positions, including caves, sangars and machine-gun posts while Venoms provided additional fire power, allowing patrols to disengage safely when counter-attacked. Although some early successes were achieved, and a significant number of rebels were killed or wounded, the quality and strength of the opposition led to the decision to fly in a second SAS squadron.

The final assault took place on the night of 26/27 January 1959 using a route discovered through aerial reconnaissance. After a gruelling nine and a half hour climb up a narrow track, eliminating an enemy outpost on the way, the SAS reached the plateau and dug in to await the rebel counter-attack. To make better time, they had had to abandon their heavy packs en-route, and were extremely relieved, therefore, to receive 9 containers of supplies in a dawn air drop from 3 RAF Pembrokes. The arrival of these unarmed transport aircraft broke the last vestiges of rebel resolve as the descending stores (under pink canopies that served as temporary tents) were mistaken for parachutists. The anticipated counter-attack never materialised and the entire plateau was occupied the next day without further fighting. The cave that had served as Talib's headquarters was discovered, together with abandoned arms and documents. The rebellion literally melted away, together with the main leaders who found refuge elsewhere in the Middle East. According to the Times, the SAS operation was, *'a brilliant example of economy in the use of force'*.[30]

The revolt was now effectively over. In fact, it was quickly discovered that the blockade had been much more effective than imagined and many tribesmen were close to starvation.[31] Bringing in food supplies became the main priority. Some sporadic activity in the form of sabotage and mine-laying continued for a few more years but there was no appetite for rebellion, either on the Jebel or across the wider Nizwa region.[32] The Sultan's authority over the Interior was now complete, although, as a precaution, an airstrip was constructed on the plateau together with an access road from the base of the Jebel.

Conclusions

The efforts of the SAS in securing Jebel Akhdar, and eliminating the last vestiges of the rebellion, have tended to obscure the earlier phases of the war, as well as the RAF's overall contribution. Since the successful night assault is credited with saving the SAS from disbandment, the emphasis is perhaps understandable. Less explicable are some of the conclusions drawn about the role of air power in defeating the rebellion and in counter-insurgency operations in general.

It is claimed, for example, that the Jebel Akhdar War *'demonstrated the limitations of air power and the need to use ground*

The ruined village of Wadi Bani Habib, a 'rebel stronghold' of the Jebel Akhdar War

forces to concentrate insurgents before air operations could be of use'.[33]

Another commentator, noting that air proscription failed to subdue the rebels in the Jebel Akhdar, has observed that *'air supremacy was no substitute for action on the ground'.*[34] Others have implied that the 'failure' of air proscription in Oman marked a turning point in how counter-insurgency campaigns would in future be conducted.[35]

There is, of course, an element of truth in these criticisms but it is simply wrong to suggest that air power failed. Air proscription - in the form of an aerial blockade - clearly worked at Buraimi, although the lack of political will limited how quickly this could be achieved. When there was a determination to act decisively, witness the British Government's response to the Sultan's request for assistance in July 1957, air power gave this political intent some very sharp teeth; within a matter of days.

It is also worth recalling that air proscription, as practiced in Aden and the Protectorates, invariably involved ground forces or the threat of ground action in the form of the Aden Protectorate Levies and RAF armoured cars.[36] While some recalcitrant tribes did capitulate simply as a result of leaflet dropping, this ignores the key role of political officers. In essence, air control was about achieving political effect. The use of forward air strips facilitated this outcome by giving political officers access to the tribes (as well as providing a potential base for future air operations). Air proscription formed just one thread (albeit an important thread) in a continuing engagement with local rulers in which they permitted their actions to be constrained (and sometimes punished) in return for political (and often financial) advantage. Amongst the tribes of the Protectorate, the 'rules' of air proscription were understood and largely respected in as much as they allowed issues (generally banditry) to be resolved quickly with the minimum, if not the total absence, of casualties – while preserving the authority of all those involved.

Without the logistic and close air support provided by the RAF in the first phase of the Jebel Akhdar War, it is difficult to envisage how less than 200 British regulars and roughly the same number of local forces, could have seized Nizwa and the surrounding region from nearly 1,000 well-armed rebels backed by thousands of sympathetic villagers.

Self-evidently, the involvement of external sponsors made defeating the insurgency more problematic than simply occupying territory – for both air and ground forces. The aerial blockade and bombing campaign certainly weakened tribal support for the rebellion but it was never going to deter Riyadh or Cairo from continuing to supply arms, money and equipment. However, physically severing this life-line proved extremely difficult. As a result, the rebellion's centre of gravity became the Jebel itself. Removing Talib and his confederates from their power base would probably have been achieved over time, as attrition wore down their resolve, but time was not on the side of Government.[37] Military operations against the rebels, and the suffering inflicted on local tribesmen, fed the propaganda machine – allowing Britain to be portrayed as an imperialist power engaged in suppressing a popular uprising against a despotic ruler.

Recent work on counter-insurgencies and the role of air forces has recognised the essential contribution of air power, in partnership with ground forces.[38] Successful counter-insurgency requires a unity of effort across multiple agencies (including political and economic). An analysis of the RAF contribution to the Jebel Akhdar War makes this abundantly clear. Employing no more than 50 aircraft, and flying some 2,000 sorties,[39] air power delivered:

Speed – Rapid deployment of ground forces and additional air assets enabling operational and strategic surprise.

Sustainability – Effective support to operations in the heat of the summer, over extremely difficult terrain, employing forward air strips to sustain the advance and evacuate casualties.

Intelligence – An accurate picture of enemy held territory and progress of the close battle while enabling independent action to be co-ordinated between separate ground units on different lines of advance.

Fire Power – Substantial fire power, beyond the small calibre weapons and limited indirect fire available to the ground forces.

Leverage – Leveraging the tactical and psychological impact of aircraft in the close air support role, enabling lightly armed infantry to take and hold objectives otherwise beyond their reach.

Low casualties – As in the Protectorates, air power largely obviated set piece battles or close fighting, reducing casualties on both sides.

Political credibility – Aircraft represented a relatively low 'political' footprint (compared to ground forces), giving the Government more room for manoeuvre without drawing international criticism.

The Jebel Akhdar War was successful because military force was applied within a strategy that balanced the ends, ways and means. It is to be regretted that the achievements of the RAF have been overlooked in the wider debate about the efficacy and relevance of air control; as if one needs to choose between employing solely air power or solely ground power in conducting counter-insurgency operations. This polarisation has set the tone for much of the subsequent argument about the best way to tackle counter-insurgencies. *'Downplayed, taken for granted, or simply ignored, air power is usually the last thing*

that most military professionals think of when the topic of counter-insurgency is raised.'[40] At times, it has appeared that the issue is more about primacy than military effect. The 'either air power or ground power' school of thought ignores the obvious conclusion that both are essential in any counter-insurgency campaign and that neither can be effective without clear political direction.

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Notes

1 For a history of air power in the region see ‘RAF Air Operations in Southwest Arabia’, Air Power, Insurgency and the ‘War on Terror’, HMSO, London, 2008.

2 Numbering some 40 men under the command of Turki bin Abdulla.

3 Meagher argues with some justification that if the Sultan had been allowed to act quickly and decisively, as he originally intended, the country might well have been spared the subsequent rebellion. Meagher, The Jebel Akhdar War, Oman 1954-1959, Marine Corps Command and Staff College, 1985.

4 Pending recruiting action to bring the Trucial Oman Scouts up to a strength of 500.

5 Lee, Flight from the Middle East, pages 115-116.

6 Time Magazine, 5 October, 1953.

7 Under the Treaty of Sib.

8 The Muscat and Oman Field Force, later redesignated the Oman Regiment, comprised some 300 effectives.

9 Some sources, including NA/WO3337/9, put the number as closer to 70.

10 Morris, Sultan in Oman, pages 104-107, Faber, London, 1957, provides a vivid but less than flattering pen-picture of Suleiman.

11 Two days after the fall of Nizwa, in accordance with the 1951 Treaty of Friendship between the United Kingdom and Oman, the Sultan asked for the “maximum military and air support which our friend Her Majesty’s Government can give.” Lee, op cit, page 125.

12 The area to the south of Jebel Akhdar was divided into 5 sectors, numbered 1-5, east to west.

13 The Venoms could drop leaflets from their split flaps.

14 On 8 August, Flt Lt Turner, operating out of Bahrain in Shackleton WL800, flew close support for the attack on Firq in a sortie lasting over 10 hours. Some slight damage from small arms fire was experienced. Further close air support was provided on successive days until the town was captured.

15 NA/WO 337/9.

16 Tanuf lies ruined to this day. It was subsequently claimed that the RAF’s fierce bombing had destroyed the village. MERIP Report No 36, April 1975.

17 It has been suggested that a more vigorous pursuit of the rebels would have led to their total defeat, avoiding the need to lay siege to Jebel Akhdar. NA/WO 337/9, page 18.

18 There are conflicting assessments of rebel numbers, ranging from less than 150 to 600 hard core members.

19 Other rebel villages included Sharaijah, Al Ain, Al Aqor and Bani Habib.

20 De la Billiere, Looking for Trouble, pages 135, Harper Collins, London, 1995. Talib reputedly laid at least 120 anti-tank mines during the course of 1958.

21 Flt Lt Watson in Shackleton WL801. The incident occurred during their second sortie of the day.

22 Gilchrist, Dhofar: A Case Study in the Application of Air Power, Sultans Armed Forces Newsletter, 2002.

23 Meagher, op cit, page 10.

24 WO/337/8, Reconnaissance Report.

25 The crash occurred on 30 August 1958. According to Colin Richardson, Flt Lt Owen Watkinson flying Venom FB4 (WR552) crashed into the plateau while strafing goats. Richardson, Masirah – Tales from a Desert Island, page 211, Scotforth Books, 2003.

26 The few Sycamore helicopters that were available could only carry 3 soldiers with their equipment.

27 Frank Kitson provides an excellent description of how these political concerns constrained the military planners in their efforts to bring the siege to a close. Kitson, Bunch of Five, pages 163-201, London: Faber, 1977.

28 Additional attacks were conducted by Sea Venom and Seahawk Aircraft embarked on HMS Bulwark.

29 De la Billiere, op cit, pages 131-151.

30 Cairo Radio reported that in the attack 120,000 British troops had been employed while Moscow embellished the story further, claiming 13,000 paratroopers had been dropped. In the last month of fighting total casualties were: Sultan's Armed Forces (including British), 13 killed and 57 wounded: Rebels, 176 killed and 57 wounded. NA WO/337/9 refers.

31 Kitson, op cit, page 201.

32 "The inhabitants of the plateau were in a wretched state: their villages had been wrecked, their fields left untilled. The ancient Falaj system was in ruins and the people themselves had been living miserably in caves." ibid, page 150.

33 Peterson, Defending Arabia, page 84, Croom Helm, Beckenham, 1986.

34 Mawby, From Tribal Rebellions to Revolution: British Counter-Insurgency Operations in Southwest Arabia 1955-67, para 23-26.

35 For example, Hoffman has written that "one of the main results of this short-lived conflict was the abandonment of the traditional policy of air control. Faced for the first time by a truly formidable enemy, Britain realized that it was no longer possible to control the restless tribes or maintain order on the Arabian Peninsula through air power alone." Hoffman, British Air Power in Peripheral Conflict 1919-1976, pages 76-81, RAND Corporation, Research Report R-3749, 1989.

36 Witness the successful expulsion of Yemeni forces from the Western Protectorate during 1925 which involved aerial attacks on forts and other strongholds in conjunction with ground operations by friendly tribes.

37 A point recognised by Kitson, who comments that "the combined effect of air action, the blockade and patrolling done by the SAS squadron had gravely weakened the enemy position." Kitson, op cit, page 195.

38 See, for example, Corum & Johnson, Air Power in Small Wars (Lawrence: University Press of Kansas, 2003) and Vick, Air Power in the New Counterinsurgency Era (Santa Monica: RAND Corporation Report, MG-509, 2006).

39 A total of 429 Shackleton sorties were flown in which 1,540 tons of bombs were dropped and 7,000 rounds of 20mm cannon fired. Nearly 1,500 Venom sorties were flown in which 3,718 rockets were fired together with 271,060 rounds of 20mm ammunition. Lee, op cit, page 138.

40 Vick, op cit, page 109.

A Royal Norweign Air Force F-16 over the Balkans

Leadership in Air Operations –
In Search of Air Power Leadership

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Introduction[1]

'Stereotypes of air power leadership abound: air forces are undisciplined; they do not fight real battles; they are populated by a glamorous elite rather than real warriors; the higher echelons are remote technocrats who raze cities and kill civilians without compunction; and so on.'[2]
(Alan Stephens)

Some years ago, the Royal Norwegian Air Force Academy (RNoAFA) began talking about *Air Power Leadership*. Leadership itself was to be coupled with the characteristics of air power. The Academy was not only to be a centre for leadership within the Air Force, but a centre for *Air Power Leadership*. The term spread quickly and it has given rise to the names of modules at the Academy, as well as conference titles. Air Power Leadership is, together with air power, one of the Academy's professional competence areas.[3]

There have, however, been few attempts to define or discuss its contents. This article, which is far from defining the term definitely, should be read as a contribution to the search for a meaning of *Air Power Leadership*.The hypothesis put forward is that the characteristics of the leadership of air operations, comes from the nature of air operations themselves. In other words; the theory launched is that the environment in which air operations are conducted and the characteristics of air power influence the leadership of air operations to a great extent. This article is an attempt to test this hypothesis.

The article will only discuss leadership in air operations per se, and not how leadership is conducted in the daily business of administrating an Air Force. It will focus on how air operations are led. This does not mean that the points that will be made are not at all valid for the daily business of an air force not operating (e.g. training). As military organisations spend most of their time preparing for operations, they operate by training. If there is any validity in the expression 'train as you fight', many of the arguments will also be valid in training circumstances.

This operational approach to *Air Power Leadership* could mean that it is only meaningful to a few people within an air force. This is due to the fact that most people within an air force are employed in support functions, and therefore it could assumed that the arguments put forward here do not apply to them. Within an air force there are lots of categories of jobs. Most people are employed within the technical branch.[4] In the support structure, there are, amongst others, specialisations in positions such as administration, logistics and medical assistance, but people in these functions rarely have any direct part in air operations. The reason for the focus on air operations is that I have not been able to find anything within air force support functions that separates them from support functions elsewhere, demanding a separate term for such leadership. The reason could be that I have limited insight into support functions. It can, however, be argued that all branches within an air force will be formed by the specifics of air operations, at least to such a degree as an air force's leader is able to influence the organisation. This is, of course, due to the fact that almost all of the leading members of any given air force, at any given time in history, come from the operational parts of that air force – air force leadership is dominated by pilots.

The term *Air Power Leadership* indicates that there is something special about this kind of leadership - if not, the term would have no meaning at all. Something has to separate Air Power Leadership from, for instance, Sea Power Leadership. It is a possibility that it is the author's belief, rather than knowledge about the other services, that forms the arguments. I am quite familiar with air operations, but not with its counterparts on land and sea. It could therefore be stereotypes of the other services that are compared with air operations.

It is not the aim of this article to try to define all the characteristics of *Air Power Leadership*, or everything that possibly makes it a special form of leadership. The aim is rather to discuss some central aspects which can make the term a helpful one. Therefore as many points as possible are discussed, and depth is neglected in favour of breadth of perspectives.

What is (Military) Leadership?
The command of military operations, hence also air operations, can be split into two separate, but connected parts, based on Martin van Creveld's analysis of the term 'Command':[5]

- *Generalship*, which is about how to employ military power in operations, mostly to influence an opponent or win a battle of a war. *Generalship* is all about choosing courses of actions to employ the forces at the commander's disposal to reach the goals stated for the operation. *Generalship* is theorized through military theory. A basic theory on how to conduct good *Generalship* is, for example, the manoeuvrist approach.
- *Leadership*, which is about how to make sure that the commander's subordinates (both units and personnel), behave in the best manner to reach the goals of the operation. In military language this is termed Command and Control, or C2. A basic theory on how best to conduct *Leadership* is, for example, mission based orders.

This division is often visible in the curricula of Military Academies, and also in their organisation. At the Royal Norwegian Air Force Academy we have two branches; one for Air Power and Technology (mostly *Generalship*), and one for Leadership and International Studies (mostly *Leadership*).

Although this division of the function of a military commander shows that it is possible for analytical purposes to divide it into two main parts, the terms *Generalship* and *Leadership* are interconnected. Good *Generalship* without good *Leadership* would for instance be almost meaningless; it does not help if the commander knows where to go – if nobody wants to follow him there.

Literature
Many books and articles exist on military command and leadership. Most of these are land centric. As is in most fields of military theory, the Army and its perspectives are in focus. Most of the texts that try to couple air forces and leadership are general theories of command or leadership written by or for air force officers. Such texts are not very relevant for this article.

There is, however, some literature that focuses on the specifics of air operations and leadership, but almost exclusively on the experience of pilots or aircrew. As the

Canadian Colonel Randall Wakelam has written:

'If we are to understand the 'leadership perspectives of aerospace power' then we must first understand the human condition in aerospace combat: we must understand the aviators' experience.'[6]

Such a perspective is too narrow. *Air Power Leadership* is not about the pilot's experience alone, it is about how to develop good leadership when one's forces are operating in the medium of the air; when they are using air power and *Air Power Leadership* is conducted. This article, therefore, seeks to embrace all parts of air operations, not just the aviators' view.

A search for literature on this topic also reveals that little has been written on leadership within the larger air forces, at least compared to their counterparts in the Army. Neither the Royal Air Force (RAF) nor US Air Force (USAF) has their own doctrine on leadership. This is, however, present in both the British and US Army. In Norway the situation is almost the opposite. That does not mean, however, that the Royal Norwegian Air Force has thought more about *Air Power Leadership* than the RAF or the USAF.

The Leadership 'bible' in the Norwegian Air Force is a good textbook, but it is a book on general principles for leadership and is valid for all the services, if not almost for all kinds of organisations.[7] Consequently, the book is also used by civilians.[8] This does not mean that it is a bad book on leadership within an air force. It only means that it does not go far enough in developing the specifics of air power leadership.

AIR POWER'S BATTLE ENVIRONMENT

Air power can be defined as follows: *'Air Power is the military use of systems operating in or passing through the air space.'*[9]

Air Power's battle environment is, of course, air space.[10] Air space is characterized by free movement in three dimensions, which gives air power access to all locations on the surface of the earth. Since man can't fly, air power is dependent upon technology and platforms. This means that the design of those platforms is essential for the exploitation of air power. As man learned to build platforms which could fly, a lot of the limitations on movement on either land or on or below the sea disappeared. This is symbolized through air space's status as almost everyman's land. Of course, nationally controlled air spaces exist, but their borders are usually not as rigidly controlled as similar boundaries on land or at sea. Air Power's flank in this perspective is the earth's surface. Air power's environment gives very low friction on objects moving through the medium of air. This gives these objects the potential of reaching very high speed. Speed is crucial to understanding air power's characteristics.[11]

The Characteristics of Air Power
What can be termed the characteristics of air power are functions of the environment in which it operates. The following three basic characteristics are usually mentioned:

Height is almost exclusively seen as beneficial to any given military operation. Height gives overview of the surface, and therefore observation was air power's first mission. From an elevated position, one has the ability to observe and dominate the happenings on the surface of the earth.

USAF KC-135 tanker refuels an F-16 Fighting Falcon over Iraq

At the same time, height has its limitations. The resolution of the area observed diminishes the higher the observer is situated, and some of man's senses becomes almost meaningless as tools for interpreting a situation. When a man or his camera are positioned 20,000 feet above the ground, one can neither smell nor feel the things observed.

Air space allows extreme speed because of the near lack of friction and other physical obstacles. Air power therefore has the inherent capability of quick power projection, humanitarian relief or reconnaissance, to name but a few potential capabilities. Because of high speed, several different missions can be conducted in a relatively short period.

Reach: About seventy per cent of the surface of the earth is covered with water and thereby about thirty per cent by land. One hundred per cent is covered by air. This gives air power unique access to the entire surface, as well as the air space surrounding it. This access is almost indifferent to terrain. The dependency upon platforms, however, means that time is a limiting factor, since all platforms use some kind of fuel, which, sooner or later, runs out. This limitation can of course be compensated for by technology, where air-to-air refuelling is the most obvious example. When air power's speed and range are coupled, the USAF's vision of 'Global Vigilance, Reach and Power' is attainable.[12]

AIR POWER LEADERSHIP – AN OPERATIONAL PERSPECTIVE

This main part of the article will discuss how air power's characteristics form the leadership of air operations. The discussion will be separated into the following seven perspectives:

- Large area of operations
- Few in battle
- Flexibility
- Tempo
- The two command chains of air Operations
- Technologically dependent
- Competence versus rank

Large Area of Operations

Air power operates within potentially very large areas at any given time. This does not mean that air power is everywhere always, but it has a potential to cover a large area within a very short time space. This wide area creates both a physical and a mental distance which again can create a kind of alienation on many different levels. It is that alienation that will be discussed here.

Distance between the leader and the led. This proposition is obvious. At its most extreme is a fighter aircraft with a single pilot. He or she is almost always flying in a formation, and that formation is led by one of the pilots in that formation. Additionally, the formation can be led by an airborne Mission Commander in another fighter aircraft, from an AWACS,[13] and/or from

a controlling agency on the ground or in the air. No matter which of these command arrangements are used for a particular mission, the leader and the led will under no circumstances during a mission have any chance of face-to-face contact. This means that Air Power Leadership is extremely dependent upon technology. Communication is normally conducted by voice through radio or digitally through different link formats (text, maps, other display information etc.). A first conclusion is therefore that leadership of air operations is performed by people who do not see their comrades, and mainly through formatted communications, either by voice or digitally.[14]

In addition, the language used within NATO is code words in English, and there are limitations with regards to communication beyond this operational language. The air operations language saves time, but is very rigid. In this perspective, *Air Power Leadership* is leadership through formatted messages in a hybrid English language through the aid of communications equipment and computers.

These tools for leadership also enable the person at the very top of a system to speak directly to a certain party at the executing level. There is nothing that hinders any given general from leading a formation of fighters himself, or from directly guiding the operations of a single Ground Based Air Defence (GBAD) Fire Unit. Such leadership, which can be seen as centralised control and execution, and is actually disconnecting or bypassing several levels of command, has also been the case from time to time. During the Kosovo War of 1999, it was not unusual for single aircraft on important missions to be directly led by a General or a Colonel within a Joint Air Operations Centre (JAOC), a disconnection of at least two levels of command.[15]

Procedures and changing command arrangements. Those who are leading air operations at different levels are continuously rotating positions with other people. The reason is, of course, the need for air operations to be led 24/7. This means that the individuals within any given command chain, especially at the lower levels, do not know exactly who is going to lead the upcoming mission before they 'meet' this person through voice or link communications. A combat pilot, for instance, will normally know only the unit which will lead his next mission, not who in that unit that is actually going to execute it. On an offensive sortie to support ground operations, they will seldom know the Forward Air Controller (FAC) they will have to trust when they are release their weapons under the FAC's guidance. Personnel, who work together in teams during air operations, airborne or on the ground, may never have met physically, and there is quite a good chance that they will never meet.

Let me give an example from my own operational background, GBAD operations. On several occasions during my service at Bardufoss Air Base[16] we tested command chains different from the normal one for our GBAD Battery. We simulated that our 'boss', Control and Reporting Centre (CRC) Sørreisa, had become non-operational. Foreign units with the capacity to command GBAD units took over its role. Most of the time these were American, either US Army or USMC. Thinking back, the most astonishing fact was how

well the change of 'boss' actually went. Suddenly, as a Tactical Control Officer of the HAWK system, I was being led by an American whom I had never met. And we performed quite well.

The E-8C Joint Surveillance Target Attack Radar System (Joint STARS) is the only airborne platform in operation that can maintain real time surveillance over a corps-sized area of the battlefield. A joint Air Force - Army program, the Joint STARS, uses a multi-mode side looking radar to detect, track, and classify moving ground vehicles in all conditions deep behind enemy lines

The main reason for this was the existence of NATO common procedures. These were not created for the purposes of interoperability; the reason for having them is tempo (a factor which soon will be discussed). We are therefore most probably discussing a side-effect of the procedures, because they enable quick changes in command arrangements. From my position I worked closely with different Americans from time to time, but I never met a single one of them face to face. The trust which has to be created between the leader and his subordinates had to be made through other arrangements than traditional leadership teambuilding events. My feeling of trust was gradually built up, as I realised through experience that these unknown Americans actually knew what they were doing. Professional confidence through professional execution of procedures and the issuing of relevant orders created the bond between me, as a subordinate, and an unknown American soldier. Knowledge of and the right use of the language and procedures of GBAD operations created the trust, because that was our mutual reference point.

The point is, again, that the leadership of air operations is not personal leadership; it is leadership through procedures, and the human environment surrounding any given unit or pilot, will change continually. You will not know for certain who your leader will be on any given day.

Distance between the violator and the victim. This argument seems to have been amplified through the development of more precise weapons that can be delivered further away from the target than before. This is, however, not the case. Some types of air operations have always used height as a central security measure, and therefore the perpetrator has not witnessed the devastation and havoc created. Think of German or Allied Bomber pilots during the Second World War, on missions over Britain, Germany and Japan, who in great formations devastated whole cities, and the argument is obvious.[17]

The visualisation of targets for the pilot or operator enhances this distance. A person who kills from an aircraft rarely sees anything but a crosshair on top of an object, or a sign on a mapped computer screen. The objects, or targets, are dehumanized through these visual presentations. The so-called 'Highway

of Death', where Coalition forces destroyed Iraqi Forces fleeing Kuwait in 1991, looked quite different within the JSTARS[18] than it did on the ground.

This dehumanization is somewhat modified by the increasing use of optical and heat-seeking sensors and weapons, where the operator in some instances can see his or her target. But an air operator mainly sees the targets through some sort of technology while the eyes are the prime sense in action. In addition, air power seldom attacks personnel directly. Mainly, it is used to attack infrastructure and equipment, where people may be present, but rarely visible on the operator's screen.

The main change since the Second World War is the relationship between the operator and the responsibility for his actions. During the Second World War it was unusual to hit anything with precision; so misses were tolerated. Today, however, the technology to ensure precision is available. Episodes of collateral damage cannot be explained through the lack of precision anymore. If you do not hit what you are aiming at in modern air operations, the perception is that there must have been a mistake, or technology has failed. The responsibility for one's actions has, therefore, increased as a result of better precision, although this still does not mean that suffering inflicted has to be confronted.[19]

Together, this physical and mental distance can create alienation and a form of cynicism regarding the killing of other human beings, mainly because of the lack of sense of the havoc one is creating.

Linguistic objectification. Another aspect of air operations is that the language used creates even further distance from what actually happens. As Berit von der Lippe has commented, this makes people almost invisible in the language, which, according to von der Lippe, 'can […] be seen as a symptom of letting the weapons speak on the behalf of humans.'[20] Von der Lippe takes her examples from the Norwegian media's coverage of Norwegian pilots operating over Afghanistan, in which it is stated that it was 'routine for the F-16 in Afghanistan'[21] or that the 'aircraft has not been fired at.'[22] Human beings rarely play an active part in air force language; objects or equipment are at the core. We say or write that 'The F-16 dropped bombs', as if that were the responsibility of the aircraft. 'Now the aircraft can communicate with each other', it was said when JTIDS (LINK 16) was introduced. This is, according to von der Lippe, a dangerous objectification of our business. In addition, the language gives human life and responsibility to our equipment. The earlier mentioned code words enhance this effect. The language of air power enhances distance and contributes to the creation of an almost virtual world.

Michael Ignatieff has termed the Kosovo war in 1999 a Virtual War, because that war increasingly seemed to turn war's violence into something virtual, at least for western forces and people.[23] Air power is an especially and increasingly virtual form of warfare. Air Power Leadership is therefore a somewhat virtual form of leadership. The distance between the commander and his subordinates and the psychological distance created by the fact that they seldom see each other, create an imaginary distance even greater than the real distance, as Stuart R. Boyd states in a splendid article: 'High tech can be impersonal.'[24]

One may ask how such leadership can work at all, given that many authorities on the subject of military command explain that one has to be present in person to exercise the necessary authority to send men into battle. To be present means to signal you are also willing to die. John Keegan's conclusion in his widely acclaimed The Mask of Command is that authority is a function of the willingness to accept the same risk as others:

'The first and foremost imperative of command is to be present in person.'[25]

The lack of the commander's presence is probably not particular to air operations; this is more an expression of a wider change in the nature of military command, from leadership in person, via Napoleon's command position on a nearby height, to to the command centres of today, which may be positioned in another part of the world.[26] However, in air operations this 'rule' is not broken because of hierarchy, where the rule is that the higher the position, the farther away from battle you are located, but because in air operations, the distance from the battle is mainly a function of your job within the system, not necessarily of your hierarchal position.

Few in battle

In air operations few of those who participate are brought into battle on purpose. If you only count those who take risk as part of your own plan and not those who happen to find themselves in dangerous situations due to enemy action, the number becomes even lower.[27]

This point is based on a small folder issued by the RAF on 'Leadership' during the Second World War.[28] It states that: 'In air warfare, only a very small proportion of the force ever fights.'[29] This can, of course, be valid in other services; a saying is that war consists of ninety nine per cent waiting. What is a special feature of air operations is, however, is that only a very small percentage of the participants engage in combat as a planned activity, the rest only use their weapons if the enemy does something to trigger them.[30] It is possible, of course, to argue that rear areas (air bases, for instance) can be attacked. But the argument remains. Few are brought into harm's way on purpose – the rest will only participate in battle if the enemy enforces battle upon them. This argument is well illustrated by the relationship between GBAD and an aircraft on a Suppression of Enemy Air Defence (SEAD) mission.[31] The SEAD-pilot and the GBAD Tactical Control Officer (TCO) have opposite challenges. The pilot chooses the time, to a certain degree the place, but is in the battle zone only for a very short period of time.[32] The TCO chooses the place, is in principle in a battle zone all the time, but does not know when that zone will turn into a dangerous place because of the entry of the aircraft on a SEAD mission.[33]

The argument is also illustrated by the Norwegian F-16 detachment to the Kosovo War in 1999. There were about 180 personnel stationed in Italy to operate four operational aircraft, while it was mostly only two aircraft, with a pilot in each, that flew in the battle zone. Accordingly, only two of a total of 180 men and woman at any given time took risk as part of any NATO plan, the rest were only to fight if the Serbs attacked them, which was highly unlikely.
The RAF folder also claims that this aspect of air operations is one of the

A USAF F-117 Nighthawk and F-15 Strike Eagle formate on a KC-135R Stratotanker during Operation IRAQI FREEDOM, April 2003

greatest challenges for an air force commander:

'With a part of his command filling one of the safest war jobs, and another part one of the most dangerous, the Air Force commander has to blend the two into a single smooth running machine, with that soundness of purpose which can come only from mutual confidence and trust.'[34]

Air power assets usually operate from safe bases, its command facilities are usually very safe, and only the pilots and crewmembers take any risk, as they enter the battle zone. In addition, only a few of those take a high risk, as most aircraft in modern air operations support the combat aircraft from a distance, and hence do not have to move into any risky areas.[35] This point is emphasized by the fact that most aircraft moving into such high risk zones only stay there for a very short period of time. In air operations one normally flies from a safe base into a battle area and then back again when the mission is over. Those who take risk are in a constant and almost daily movement from peace to war to peace on a continuous rotation. William Lind, in a lecture given at the Norwegian War Academy a few years ago, stated that the Kosovo War was a perfect pilot-war. They could get out of bed a bit early, get their mission briefings, do their planning, fly their sortie with relative little risk, and be on the ground early enough to make the bar opening at the beach hotel in Italy at night. This description is exaggerated, but it illustrates the argument; in air operations few are brought into battle on purpose, and even they do not stay in the battle zone for very long.

From this point several interesting questions arise. What does this fact mean for the organisation as a whole; that only a few of its personnel take risk on purpose? What does it mean for those who 'travel' back and forth in these operations, between peace, war and peace again in a few hours? What does it mean for the leaders of such operations, who seldom risk anything, even at quite low levels within the hierarchy? Does this situation create the elitism which is such a profound part of air forces? The elitism that states that elevates pilots to primacy in status? Is this why most air forces are led by pilots? Most air forces emphasise this as one of their central leadership features: the pilots are the leaders. In Alan Stephens's words:

'The mystique of the pilot has loomed large in shaping the nature of air forces and therefore, their leadership style.'[36]

It is also possible that the elitism stems from the sheer human fascination for flight, a fascination pointed out by many writers.[37] We admire these brave men – and a few women – in their fast jets and other scary-looking aircraft, such as attack helicopters. There still is a mystique surrounding pilots, some writers characterising them as superhuman.[38] Even internally within

the pilot milieu – and especially within fighter squadrons – an elite factor is established, what can be termed as the 'hot-rod factor.' The splendid portrait of a pilot during the First World War in Rowan Atkinson's TV series *Blackadder*, named Lord Flasheart, and portrayed as a complete stereotype, is worth mentioning, since he has become a hero for young pilots![39]

If this elitism comes from the fact that some take risk while others don't, it could be considered fair. If this is the case, the elitism is a kind of code of honour, where those of us who take less risks or no risk at all, accept that those who take risks represent the elite. Based on this view, it is not strange that combat pilots are the elite, and thereby also the leaders of their air forces.

War for a western combat pilot seems, however, to have changed rapidly since the end of the Cold War, especially when it comes to risk. In the Kosovo war in 1999, not a single NATO-pilot lost his life due to enemy action. In today's wars, air operations seem less risky than ever before. Is it still then reasonable that this elitism exists, or is it a historical anachronism?

The development of Unmanned Aerial Vehicles (UAV)[40] also challenges elitism. If nobody flies in the future, who should then be the elite? The development of UAVs poses several questions. Firstly, who is to pilot them? Different air forces have sought different solutions to this question. While in the USAF, the operator has to be a regular pilot first and then qualify as a UAV pilot, in the US Army no prior pilot training is required. Another question, although not imminent at present, is who will be the commanders of the pilotless air force of the future? If the combat pilots disappear, who will be the new elite of air forces? The UAV controllers? If the theory about the elitism of air forces coming from the willingness to take risk is correct, elitism may even disappear, since UAV controllers do not take risk at all. To quote Alan Stephens once more:

'In short, being a pilot will not necessarily be a prerequisite for aerospace command; nor, indeed, might it even provide the most suitable apprenticeship.'[41]

Flexibility

Air power's flexibility is seen mostly through its multiple areas of use. Probably one of the most flexible of air power platforms is the modern fighter jet. The name of the Swedish modern fighter, JAS Gripen, where the Swedish acronym JAS means Hunt (fighter), Attack, Reconnaissance,[42] illustrates this. In addition, the reach of an aircraft means that its possible use within each of the categories is plentiful. The flexibility of air power is therefore created through its reach, although this must be coupled to speed. If each of the three categories mentioned above has a hundred potential 'targets' in one sortie, then you have three hundred possibilities for the use of that aircraft alone. Reality is, of course, usually more complex than this suggests.

Phillip Meilinger has claimed that 'Airpower Is an Inherently Strategic Force.'[43] If that is the case, do air power leaders need to be strategic analysts? The targeting process is of course central to this issue.[44] Since air power has such flexibility, and since its force can reach any conceiveable point on the earth's surface, some claim that air power should be used to target the enemy's centres of gravity directly, without

going the indirect way via their armed forces. If this view is correct, Air Power Leadership does not only demand the ability to analyze the enemies military capacities, and how he can be compelled to give into our demands by attacking that capacity, but also the ability to analyze his society, to try to conduct what are usually termed as strategic air operations. Air power has the potential to hit almost everything within a given society. If air power is a strategic tool, is it then correct that a combat pilot is the right one to lead the analysis of an enemy's society? It is still a mantra within most air forces that this is the case. To quote the Canadian (then colonel) Brett Cairns:

'*History has shown, on many occasions, that leaders from independent air force organizations who have had airborne leadership experience and specialized training in a wide range of aerospace operations at the tactical, operational, and strategic levels were generally best able to exploit the flexibility and capabilities of aerospace power.'*[45]

Cairns does not present any empirical data to support his point, and such data probably does not exist. He can, however, be right in asserting that one has to have the same experience if one is to lead operations (Leadership). In Norwegian fighter squadrons, it is axiomatic that the squadron leader has to fly himself, if not he or she is not deemed fit for the job. Maybe this is because the leader has got to show willingness to risk something? Or is it because the leader has to know every detail about the operations by means of updated personal experience?

In spite of this mantra, it is by no means clear that the choice of pilots as the leaders of air operations is perfect when it comes to the targeting part of that operation (Generalship). Air power has often been used to attack societies and structures within societies, often to deter an enemy from pursuing their goal. This requires in-depth analysis of an enemy's society. Is a fighter pilot best at doing such an analysis? It is hard to believe such a proposition. It could be that different analysts of societies, such as political scientists, social anthropologists, sociologists or even psychologists at least ought to be consulted in such an analysis. Maybe a political scientist is better educated and trained to perform this task?

Tempo and Speed

Air power is almost synonymous with high speed. The sheer speed of the platforms creates a focus on fast decisions. This demand for quick decisions is best shown in defensive air operations. The personnel operating the means for air defence seldom choose the time when they have to defend their airspace from hostile intrusion. The timing for an active defence is decided by the enemy and not by the defender. It is the attacker that chooses the time (and place), and for that very reason, he is able to plan in more detail than the defender. In defensive air operations, there exists a demand for second to second leadership, shown through the extensive NADGE-system[46] built throughout Western Europe during the Cold War.

Consider, for instance, the situation boards within a joint headquarters. In the centre of such a headquarters, one usually finds at least four operations centres, one for each service, and one joint centre. While the people leading air operations are hardly satisfied with an air picture that updates itself every

ten seconds, those in the maritime cell are happy with a four hour update. Although this difference is partly due to the relatively tight control of air resources from a high level, the difference also says something about the operational speed of air operations versus maritime and land operations, and therefore also about the demand for quick decisions.

Thus it is the speed of air operations that creates the need for quick decisions. A tactical director of an air defence system may do almost nothing for several days, and then have to make several decisions within a twenty to thirty second period. He is going to base his situational awareness on several sources of information, and be the final arbiter on whether or not a target is to be shot at. Air defence operations, because of the demand for quick decisions, are extremely focused upon procedures and drill. In addition, the language mostly consists of specialised code words and acronyms, so that the personnel operating together who are connected via voice communications systems are able to understand each other quickly. Decisions are taken almost simultaneously with the action itself. This demand for rapid decisions may be valid for all services operating in different mediums on a tactical level, but the updating time on the air operations situation in the joint headquarters shows that this pressure also exists in the higher levels of command in air operations.

A lot of the technology within communications and information equipment is developed to let the operator decide on options more easily and quickly than before. This technological development tries

US Air Force MH-60G Pave Hawk helicopter takes off from Tallil Air Base, Iraq

to create near-perfect situational awareness. My personal experience, though, is that automation, although creating speedy decisions, and especially in such a fractionated environment as military operations, has certain limitations, and that one therefore needs to think carefully before leaving too many substantial decisions to the machines.[47]

The need for quick decisions in air operations has not been so acute for western air power during recent years. Because of the technological and numerical superiority of western air forces, especially the USAF, over any enemy since the end of the Cold War, the demand for quick decisions in air defence operations has been somewhat reduced. During the Kosovo War, and the wars in Afghanistan and Iraq, western air forces have been so superior that they have quite easily established air superiority, at least at higher altitudes. Thereafter the aircraft have been operating relatively unhindered. Since air power is often used to target non-mobile targets, this superiority in the air means that a lot of operations can

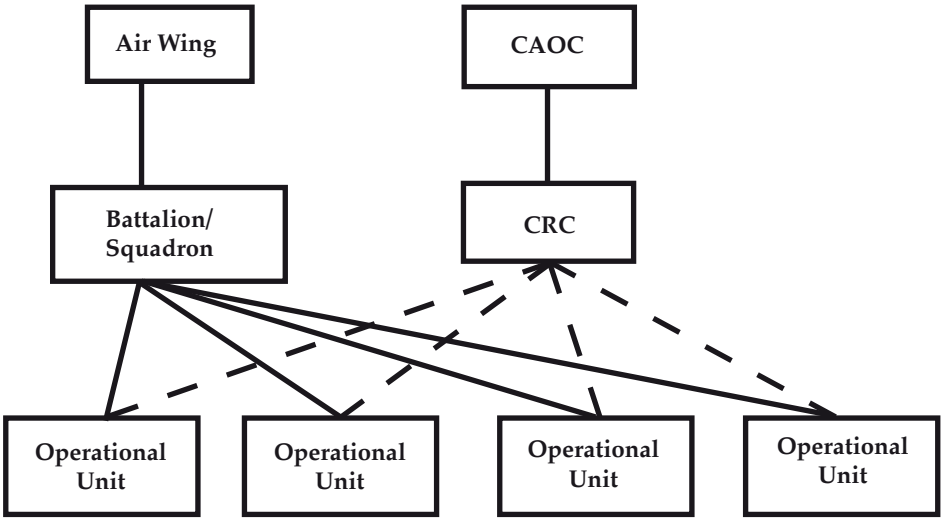

Figure 1: The two command chains of air operational units

be planned to a very detailed level and conducted as planned.

At the same time, the focus upon Time Sensitive- or Dynamic Targeting points in another direction. The sole purpose of this development is to shorten the time span between when target detection and attack. Quick decisions in a dynamic environment are therefore a feature of leadership in air operations, although some are carefully planned and even conducted accordingly.

The two Command Chains of Air Operations

Personnel, who have responsibilities in the midst of an air operations command chain,[48] are for the most part only responsible for producing combat-ready units and placing them in a position in which they can fight. The operational commander at this intermediate level is rarely the one who leads his or her unit into battle. When the aircraft or the air defence system he or she commands on a daily basis actually operates, they are not under his or her command. Instead, they are led through a second command chain. This second command chain could be termed operational command,[49] and is usually represented by some sort of minute to minute detailed command function.[50] When the battle systems of air power operate, they are being commanded through this operational command chain. In Norway this is normally done through one of the two Control and Reporting Centres (CRC), which again are commanded from a Combined Air Operations Centre (CAOC).

The point is that the regular commander is not part of the command chain when the unit is operating. The operational units are not led by their 'normal' commanders in the most critical of tasks. Combat aircraft are, for instance, controlled directly from a CRC or an AWACS.[51] The same is true for GBAD-systems. This means that operational air

units have two command chains. One of them could be termed regular or daily command, and the other, as already mentioned, operational command. This is illustrated in figure 1. The solid lines represent the regular command chain, while the broken lines represent th operational command chain:

This divided command chain can, of course, create tensions within the larger organisation. From my own personal experience with GBAD organisations, this is a familiar problem. The Battalion Commander and his staff have often been criticised for being too occupied with logistical and personnel problems (their responsibility), and not concerned enough with the real function of the GBAD-systems; to defend a certain air space.[52]

Technologically Dependent

Air power is power projected through technology. Air operations are not possible without technology. Neither is flying, for that matter. Some thinkers claim that this fact has had a marked influence on air force culture.[53] Phillip Meilinger uses the museums of the various military branches as an example. In an air force museum, the primary focus lies on technology, while in an army museum, the focus is placed on people, through the soldier's clothing, equipment and so on. He claims, without further specification, that this shows that air forces have a fixation on technology.[54] Machines rather than people are at their core.

Technological dependency certainly contributes to creating a large and specialised logistic apparatus. As Martin van Creveld has pointed out, the technological level creates a greater need for specialists with regard to the purchase, utilisation and maintenance of new technology.[55] One might argue that the opposite effect is possible – the launcher in the new weapons systems NASAMS is, for instance, a lot easier to use than the older and less sophisticated launcher in the HAWK-system, simply because one needs to understand less about the new system to get the job done. It seems that some specialist functions are becoming easier while others are becoming far more complex. In this respect, it might be useful to differentiate between those who are developing high-tech machinery (engineers) and those who are actually utilising it (operators).

An organisation is less flexible if it employs only specialists who are extremely good in their own fields, but know little or nothing about other fields, thereby becoming dependant upon others to get their job done. Staff rotation is no longer possible during an operation. A technician has never been able to step in for a pilot on short notice (or vice versa), but the increased number of specialist functions creates a far more complex image. The interesting fact in this respect is that *Air Power Leadership*, even at a relatively low level in the organisation, is the leadership of specialists, and the leader is usually not the first among his peers in all situations. The question is how does a leader make a large number of specialists all pull in the same direction when the leader is not even familiar with the competence of his subordinates? This leads to the question of what kind of leader air force organisations need – the generalist or the specialist? Depending on the answer one might give, the leading position of pilots and especially fighter pilots in most air forces could be questioned.

The potential paradox between science and the art of war is another interesting aspect of the technological dependency of air power. Any air force organisation is highly dependant upon the use of technology, and is therefore likely to develop what one might call a technological culture, where the term technology must be interpreted to refer to Maths and Physics. The distinguishing feature of such a culture is that any given input always leads to the same output. Military theory, however, often claims that the central way to victory in war is the creative leader. The leader must be in possession of creative *generalship*, to use the terminology introduced earlier in this essay. Such creative *generalship* is often referred to as the art of war.

Dennis Drew has pointed to the existence of a tension between science and the art of war, as the training of officers in an air force organisation mostly consists of repeating various drills and making sure that these are carried out flawlessly.[56] Drew claims that for most officers the main focus is on drills and checklists during the early years of their career. This becomes apparent during active operations, as all air power operations are conducted with a high degree of control. Even though it is the pilot or tactical fire control officer who is in charge of running the operations at their level, there is generally little room for individual action in the low levels of a command chain. This is also shown through the way that air force troops get their orders. Not only are the orders given in a particular format, which in itself is a sign of strict control, but the content is also usually fairly detailed, even though this may vary from order to order. The standard format saves time, but creates rigidity. At some point in any officer's career, however, this checklist-dominated approach to operations must be replaced by the flexible and creative powers that constitute good generalship. It must be noted, however, that from the point of view of the superior west, air power operations have lately been more about good organisation or officialdom – military bureaucracy - than the art of war. To end this argument, a quote from the original source states:

'How can airmen develop the Clausewitzian mindset required to fully exploit airpower's unlimited employment options when so much of their checklist-dominated professional training has conditioned them to think otherwise?'[57]

It might be claimed, however, that the safety created by the drills and procedures underpins creativity. Arent Arntzen claims that confidence in routines makes it possible to be flexible and that confidence in the basics is among those things that make creativity possible.[58]

Competence Versus Rank[59]

On the lower levels of the command chain, primacy in air operations is usually not decided on the basis of rank, but rather by the officer's competence and the position he or she is currently holds. In aircraft where there is more than one pilot, this might, in extreme cases, mean that a second-lieutenant is commanding a major. The same situation arises every day in GBAD-operations and in fighter plane formations. Air forces are characterised by a distinct checkout-culture, where all operators have to go through several checkouts in order to prove their ability to fill a certain function or position. In air operations competence outranks rank.

The two command chains of air operations enhance this point, since the one issuing commands and orders to aircraft and GBAD-units can have a substantially lower rank than the ones he or she is ordering. One might surmise that this focus on competence and position instead of rank leads to a situation where rank does not mean much. At least, that is what we in the Air Force like to believe. This point is also underlined by the findings in Are Syversen's Masters thesis' on the cultural differences between the three services of the Norwegian Armed Forces, where he finds solid evidence that rank means less to air force officers than their Army equivalents.[60]

Operator and Leader

It is an interesting feature of air operations that pilots keep on flying, although they rise in both rank and age. It is quite common that Lieutenant Colonels and Majors not only are leaders, but also operational pilots. In a fighter squadron this is not only seen as a given, but is viewed as a necessity, since that is the only way a leader can understand the challenges facing the operators. As Alan Stephens writes:

'The contrast with armies and navies is conspicuous: in surface forces, combat arms officers (other than pilots) are occupied primarily with directing the activities of others from the time they graduate.'[61]

This perspective creates a twofold demand of competence among air force leaders. They need both the technical skills and the leadership skills. A battalion commander within the infantry, normally also a Lieutenant Colonel, does not need to be the best infantryman (any longer), since he is, first and foremost the leader of other infantrymen. In air operations, it is expected that you can fill both positions when you are commanding a squadron.

SUMMARY

The article illustrates some aspects of *Air Power Leadership*, through an examination of how air operations are actually conducted. The hypothesis was that the battle environment and basic features of air power shape the distinctive leadership characteristics of air operations to a substantial degree.

The term *Air Power Leadership*, if it is to have meaning, demands special features - if not, we do not need the term. The article discusses some special features, but it should be stressed that the arguments given are far from comprehensive. The factors which have been discussed do, however, enhance the possible truth of the hypothesis that it is the characteristics of air power itself that demand a particular brand of leadership for air operations.

These characteristics are a product of the factors of height, speed and range, which form the basic analytical tool when explaining the difference between air operations and land or maritime operations. Because of the great range and speed of air operations, they must be led, commanded and controlled in a different way than land or maritime operations. Amongst other things, this leads to a technologically dependent and almost virtual form of leadership, where the commander at different levels and the subordinates do not even have to know the names of each other.

In addition, the flexibility of air power creates almost innumerable possibilities for the use of each platform. At the same time, the number of platforms is

not unlimited. This leads to centralised leadership where the possibility of creativity and maneuvrism in the lower command positions is quite low. The range of air operations creates the possibility of attacking an enemy almost anywhere. Air power has the ability to attack targets that may have major strategic or political effect, at least in theory. Such targeting demands political and social insight, an insight which may not be automatically incorporated into the leader of air operations, who normally is a (fighter) pilot.

Last, but not least, the command chains of air operations create a certain mental flexibility within air forces which may be greater than one might expect in a military organisation. From personal experience, it should be added that the hierarchy within the civilian enterprises where I have been employed has been far more rigid than within the RNoAF. This could be a function of the flexibility with which air forces practice leadership, a flexibility we seldom reflect upon. For example, it is extremely difficult to explain to an Army officer that combat aircraft are not led by the squadron commander on operations - such flexible command arrangements are simply not a part of his or her normal way of conducting business.

On the basis of this analyisis then, the term *Air Power Leadership* is a necessary description for a distinct and unique approach to command, driven by the peculiar characteristics of the air environment.

Notes

1 A Norwegian version of this article is printed in C. Moldjord, A. Gravråkmo and H. Nordvik (Ed.), Militær ledelse og de menneskelige faktorene (Trondheim, Norway, Tapir Akademisk Forlag, 2005) ('Military Leadership and Human Dimensions')

2 A. Stephens, 'Command in the Air', in P. W. Gray and S. Cox (Ed.), Air Power Leadership, Theory and Practice (London: The Stationery Office, 2003), 3

3 Luftkrigsskolen, Luftkrigsskolens strategi (Trondheim: Luftkrigsskolen, 2002) ('The Strategy of the Royal Norwegian Air Force Academy')

4 Within the RNoAF most technicians are not organised within the Air Force, but as a part of the Defence Logistics Organisation. They are still, though, the main personnel body of any air operation.

5 M. van Creveld, Command in War (Cambridge, Mass.: Harvard University Press, 1985), 6. Creveld does not use the same terms as I do here, although the parts of Command are equal. Creveld uses the term "output-related" for what I have termed Generalship, and the term "function-related" for what I have termed Leadership.

6 R. Wakelam, 'Aerospace Power and Leadership Perspectives: The Human Dimension' Canadian Military Journal (Autumn 2003), 17-24, quote from 17

7 Luftforsvarsstaben, HFL 400-1, Håndbok i Lederskap for Luftforsvaret (Oslo: Luftforsvarsstaben, 1995), written by J. Skjevdal and R. E. Henriksen ('Leadership Handbook for the Air Force')

8 The "head hunter" Elin Ørjasæter has defined it as one of the three best books on Leadership ever written, see interview with her in Magasinet, the newspaper Dagbladet's magazine on Saturdays, 23.10.2004

9 Forsvarets Stabsskole, Forsvarets Doktrine for Luftoperasjoner (Oslo, Forsvarets Overkommando, 2002) ('The Norwegian Air Power Doctrine'), 13. Author's translation ('Luftmakt er militær bruk av systemer som operer i eller passerer gjennom luftrommet.')

10 If space itself is to be included in the term air power, as in aerospace power, has been an ongoing debate since the late 1950s. What seems to be the trend nowadays, is to separate the two, as in Air and Space Power. In this article the two are seen as separate battle environments, and this article focuses upon air power.

11 U.S. Air Force, Air Force Manual I-1, Basic Aerospace Doctrine of the United States Air Force (Washington D.C., US Air Force, 1991)

12 The vision is available as of 12.12.2007 from

http://www.af.mil/shared/media/document/AFD-060228-054.pdf
13 Airborne Warning and Control System
14 The exception is of course leadership within an airborne crew, where there exist command arrangements within the crew.
15 A. H. Cordesman, The Lessons and Non-Lessons of the Air and Missile Campaign in Kosovo (London, Praeger, 2001) 278-onwards
16 I served there from 1995 to 2001.
17 H. Høiback, 'Den anvendte umoral' Internasjonal Politikk (1999), 451-471
18 Joint Surveillance Target and Attack Radar System
19 Thank you to Nils Naastad for this argument
20 B. von der Lippe, 'Rikt språk – blodfattig språkbruk' Forsvarsforum, nr. 5. (May 2004), 59. Author's translation ('kan […] sees som et symptom på at man lar våpnene/teknologien snakke på egne vegne'). It is possible to argue that this is not unique for air power. We say and write that the "Frigate fired a missile" or that the "Tank drove into a building". My argument about the language can therefore be as valid for all services, yes indeed for every business where machines or any other equipment has a central position. But, I have a hunch that this is especially important within an air force, since machinery and equipment plays such a central part in what we do.
21 von der Lippe, 'Rikt språk', author's translation ("Rutine for F-16 i Aghanistan")
22 von der Lippe, 'Rikt språk', author's translation ("flyene heller ikke er blitt beskutt")
23 M. Ignatieff, Virtual War. Kosovo and Beyond (New York, Henry Holt, 2000)
24 S. R. Boyd, 'Leadership and High Technology' in Air University (Ed.), Concepts for Air Force Leadership, AU-24 (Maxwell AFB, Alabama, Air University Press, 1996), 227-229, quote from 228
25 J. Keegan, The Mask of Command (London, Jonathan Cape, 1987), 329
26 H. Høiback, Kommando- og kontrollfilosofi (Kongsvinger: Luftforsvarets Kontroll- og Varslingsskole, 2000) ('A Philosophy of Command and Control')
27 The word risk can have different meanings. We often say that a leader takes risk when he chooses a course of action or any other decision which he makes. In this context, however, risk is defined narrowly as the risk of being hurt or killed by enemy action.
28 This folder was kindly brought to the Air Force Academy's and my attention by Lieutenant General (R) Wilhelm Mohr of the RNoAF, himself a veteran of the Second World War
29 Royal Air Force, Leadership – Some Notes for the guidance of Royal Air Force Officers. PAM (AIR) 202, Reprinted June 1965, (Manchester, Blacklock & co, 1965), 2
30 B. Cairns, 'Aerospace Power and Leadership Perspectives' Canadian Military Journal (Spring 2002), 40
31 An aircraft flying a defensive mission has the same challenges as the GBAD operator.
32 Often it can be counted in seconds, normally not more than a couple of minutes.
33 Thanks to Lars Arne Reigstad, who had the first idea for this argument
34 Royal Air Force, Leadership, 2
35 Transport aircraft from time to time move into high risk areas, for instance in the air bridge operation into Sarajevo during the war in Bosnia
36 Stephens, 'Command in the Air', 5
37 A. Gat, Fascist and Liberal Visions of War. Fuller, Liddel Hart, Douhet and Other Modernists (Oxford, Claredon, 1998); R. Wohl, A Passion for Wings. Aviation and the Western Imagination 1908-1918 (New Haven, Conn., Yale University Press, 1994)
38 P. Fritzsche, A Nation of Fliers. German Aviation and the Popular Imagination (Cambridge, Massachusetts, Harvard University Press, 1992)
39 BBC, Blackadder Goes Forth, (1992). My fighter pilot friend, Hans Ole Sandnes, has pointed to the fact that this elitism also creates expectations, since everybody expects that a fighter pilot is good at almost everything.
40 Including Unmanned Combat Aerial Vehicles (UCAV)
41 Stephens, 'The Command in the Air', 8
42 JAS is a Swedish abbreviation for Jakt, Attak, Spaning
43 P. Meilinger, 'Ten Propositions Regarding Air Power' Airpower Journal (Spring, 1996), 3
44 Meilinger, 'Ten Propositions', 6

45 Cairns, 'Aerospace Power and Leadership Perspectives', 38
46 NATO Air Defence Ground Environment
47 O. J. Maaø, 'Militærmakt og teknologi' in Norsk Militært Tidsskrift, vol 171, Nr. 5 (1995), 22-32 ('Military Power and Technology')
48 Typically a Battalion Commander within the Air Defence, a Squadron Leader in aerial operations.
49 This is not the same as the NATO-term Operational Command which defines a certain authority given to a commander over defined forces.
50 For air operations within the European part of NATO normally a part of the NADGE-system. The Combined Air Operations Centre (CAOC) and the Control and Reporting Centre (CRC) are the NADGE-systems foremost command components.
51 Airborne Warning and Control System
52 According to Hans Ole Sandnes' experience, fighter squadrons have no such tensions.
53 C. H. Builder, The Masks of War: American Military Styles in Strategy and Analyses (Baltimore, Johns Hopkins, 1989); Meilinger, 'Ten Propositions', 12
54 Meilinger, 'Ten Propositions', 17, see especially endnote 48.
55 M. van Creveld, Technology and War from 2000 B.C. to the Present (New York, Free Press, 1989)
56 D. Drew, 'The Three Pillars of Professional Competence: Imperatives for Airpower Leaders', in Gray and Cox, Air Power Leadership, 66
57 Drew, 'The Three Pillars', 66
58 Discussion at the Royal Norwegian Air Force Academy, May 2004
5 Thank you to Ståle Mikalsen for this argument
60 A. Syversen, Et forsvar i endring: en ny tid og nye utfordringer for militære ledere (Master's Thesis in Social Antrophology, NTNU, Trondheim, 2001)
61 Stephens, 'Command in the Air', 6

Polish aircrew serving with 304 Squadron with their Wellington maritime patrol aircraft

The Polish Air Force in the United Kingdom, 1939-1946

By Michael Alfred Peszke

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This paper focuses on the legal status of the Polish Air Force during World War Two, when its personnel and combat units were based in the United Kingdom. The history of the Polish Air Force in the United Kingdom begins in October 1939 and ends in late 1946. Neither the inauspicious beginning, nor its sad demise when the Polish Air Force faded into historical oblivion and ambiguity, augured or reflected its war time accomplishments.

This six year history of diplomatic, legalistic and military vicissitudes is one that remains in some respects at best murky or distorted. Viewed through many different historical perceptions, albeit most quite sympathetic, the picture that has been presented is in many aspects very erroneous history, although the PAF's martial deeds have been well documented in many excellent books.[1]

The background to the history of the Poles in exile

The unusual alliance had its roots in March 1939 when the British Government reluctantly acknowledged that Germany threatened its traditional balance of power policy. The very tempestuous summer of 1939 which followed saw the British, with French support, attempting to dissuade Hitler from war and also seeking an Eastern ally. This led to the Polish-British Treaty of Mutual Support.[2]

Following the invasion and partition of Poland by the Germans and the Soviets in September 1939 the Polish Government was reformed in Paris, according to Polish constitutional prerogatives, and was recognized by all countries except for the two partitioning dictatorships. Even Italy continued to have formal relations with the Polish Government in Paris until it entered the war in June 1940. At the same time the new Polish Prime Minister and Commander-in-Chief, General Wladsylaw Sikorski, declared that the Polish Armed Forces would be recreated on the territories of its western allies, France and the United Kingdom.[3] At a Polish Cabinet meeting on January 23rd 1940 General Wladyslaw Sikorski stated that "the recreation of the Polish Army in its greatest size is the most important and essential goal of the [Polish] Government".[4] This goal was to be accomplished by the evacuation of the nearly 40,000 Polish military interned in Hungary and Romania, and the conscription of Polish citizens living in France of whom there were approximately one million. About 8,000 Polish airmen, approximately 60% of the mobilized Polish air personnel in 1939 were located in Romania and a smaller number of less than 1,000 in Lithuania.[5]

Once in Romania, the Polish military were interned but it has to be emphasized that the conditions of internment were reasonable and the availability of an active Polish embassy in Bucharest with sufficient gold to back the exchange of the Polish zloty, did allow expeditious, although clandestine, evacuation to France.[6]

First period
October 1939 through June 1940

As early as October 1939 the Polish ambassador and military attaché in Romania approached the British air attaché in Bucharest suggesting that all interned Polish air personnel be directly evacuated by clandestine means to the United Kingdom. Their action was not without precedent as a Polish Destroyer Division had already been deployed to British ports prior to the War and two submarines had escaped to Britain from the Baltic after the Polish ports were occupied by the Germans. The

Poles were also motivated by their own conviction that the Royal Air Force was a better role model than French aviation because of its superior infrastructure, advanced industrial base, and the performance of its planes in service. Hence there was a political, military and psychological reason for this Polish initiative.

The British air attaché in Bucharest responded in a sympathetic fashion and promised to alert his superiors in London to the Polish wishes. The Poles with help from the French and British, and a passive sympathetic stance on the part of most Romanians, organized their clandestine escapes to French territories and to France. But time was pressing and there was ever growing concern that German and probably Soviet pressure on the Romanians would make escapes from internment camps ever more difficult. There was also considerable anxiety that, following the assassination of Armand Calinescu on 21 September 1939, and the ever growing influence of the pro-German factions, the Poles in Romania would not just be exposed to increased hardship but that they might be delivered to the Germans. At the same time the British consular office in Bucharest sought instructions from the Foreign Office in London about the policy of granting visas to Polish citizens.[7]

During trilateral French-Polish-British discussions in Paris on 25 October 1939 the Poles put forward their case for centralizing all their air personnel in Britain. The Polish argument was that the Poles were more familiar with British Engines which had been built in Poland under licenses, so it was natural for the air force to be recreated in the United Kingdom. But while the first and basic step in evacuating personnel from Romania to France was effectively managed over the next six months, the actual formation of Polish aviation units in the two allied countries became mired in French bureaucratic apathy and British Air Ministry ambivalence, if not outright reluctance. It is evident that the British were very much influenced in their negotiating posture by their perception of the Polish capabilities. Early on a strong if exaggerated perception of Polish failure ran as an undercurrent beneath the surface of the British position.[8]

An arrangement was arrived at by the British and French that the "burden" of dealing with the Polish airmen would be shared fifty-fifty. At that point in time, the British burden would have been about 2,000 Polish airmen.[9] The cornerstone of British policy was the memorandum of Air Vice-Marshal Evill of 25 October 1939 which can be summarized as follows: "The British Government has agreed to receive in England such Polish air personnel as the Polish Government may consider desirable". However, further conditions quickly followed. The British agreed that two active and two reserve bomber squadrons equipped with Fairey Battles would be formed from the Polish personnel[10], but adamantly refused to consider the formation of Polish fighter squadrons. One of the excuses was that the French had expressed a wish to have such squadrons on French soil. The real reason was undoubtedly much more complicated and involved the reasonable question of English language proficiency as well as concern that demoralized Polish pilots would have a negative impact on their British colleagues.

Furthermore the British Air Ministry (the Minister for Air was Sir Kingsley Wood in the Chamberlain Government) insisted that all Polish Air Personnel, who were to be transferred to the UK from France were for administrative reasons to be enrolled in the Royal Air Force Volunteer Reserve and take an oath of allegiance to the King. The

major argument was that the unwritten British constitution precluded the basing of foreign troops on British territory. It should be pointed out that Polish naval units were operating out of British ports and the Polish Navy Headquarters were in London. One could argue in a casuistic fashion that Polish sailors were aboard Polish ships and wore Polish uniforms on shore leave. Given how quickly the British modified their constitutional issues in July 1940 one can only infer that this was much more an excuse than a real impediment.[11]

But this was only the beginning of many petty conditions. The British Air Ministry insisted that all Polish Air Force officers regardless of their Polish rank were to be commissioned as pilot officers, and all officer cadets and all Polish non-commissioned officers, even warrant officers, were to be privates. Only RAF insignia could be worn and Polish decorations only by permission of the local RAF commanding officer. From all available archival and other accounts including the memoirs of the Polish Air Force Inspector and thus GOC, Jozef Zajac, there was a prolonged negotiating stalemate. While the Poles refused to sign the agreement they abided by British conditions and enforced it on the Polish personnel being moved to the United Kingdom. For very junior officers, who were mere pod-poruczniks (sub-lieutenants) these conditions were acceptable. For mid level or senior officers and senior and well trained non-commissioned rank they were an unwelcome abomination.[12]

In December 1939 Zajac minuted the British agreeing in principle to the Air Ministry conditions and asking that the Poles be moved to Britain as 'urgently as possible'. The official Polish position seemed to be to ignore British conditions and hope for the best. In fact Zajac obviously hoped for changes to be negotiated by calling the British position and his agreement a "mala umowa" or little agreement. The Poles began to arrive at RAF Eastchurch in late December 1939 and found it a civilized haven after the miserable living conditions in France. In France the Polish airmen were primarily located in a number of primitive camps, such as the summer Olympic athletes' village near Lyons which was unheated. The Polish personnel lacked any semi-martial activity, were unpaid for months, and had no uniforms. With nothing to occupy their time, they became disgruntled and blamed their own superiors for the French malaise. Concern about their families in occupied Poland and homesickness further lowered morale.

What ensued was a serious of unco-ordinated Polish interventions to modify the British conditions. The Polish side was seriously handicapped by the fact that, except for the Polish air attaché in London, Lt Colonel B Kwiecinski, none of the other Polish generals or senior officers spoke English. The Polish Air Force GOC (General J Zajaac) procrastinated in having the agreement actually signed but insisted that the Poles, picked by a joint Polish-British Commission, abide by the British rules for the sake of the Polish Service.[13] At this stage alarmed by the tenor of the wording, General Sikorski wrote a personal letter to Sir Kingsley Wood requesting that certain British conditions be modified. These primarily dealt with the status of the Polish officers, and the British limitation on the total number of Poles to be transferred.[14]

Sir Kingsley Wood gave a diplomatic but negative response. General Sikorski then wrote to the Polish ambassador in London seeking intervention but again achieved nothing. The British Air Ministry was adamant. General Sikorski was cognizant of his success in November 1939 when, during his visit to the United Kingdom and Inspection of the Polish Warships in British ports,

a very satisfactory Polish-British Naval Agreement was concluded.[15] He was not enjoying such success with the Air Ministry.

Lt Colonel Kwiecinski's letter to the Polish Headquarters in Paris of February 1940 reflects the Polish ambiguity and confusion. The letter portrays a man who feels that he is being wrongly blamed for the unsatisfactory aspects of the proposed agreement. Kwiecinski categorically states that he had neither approved nor disapproved the Air Ministry memorandum and that in fact the GOC of the Polish Air Force in Paris had approved it. Lt Colonel Kwiecinski was so incensed by the implication that he had signed off on this process that he formally requested that if was suspected of playing a negative role a formal enquiry be convened which would be a first step to a court martial. Kwiecinski, in a letter to Paris stated the situation starkly: 'we (ie the Poles) can either accept British conditions, give up on the hope of having bomber squadrons in the United Kingdom, or wait for a constitutional change in the British posture'.

Nothing of the sort occurred and Kwiecinski stayed in his post as Polish attaché throughout the war. In April 1940 General Sikorski now wrote to the British Prime Minister. The Air Ministry stood firm but did allow the Poles certain concessions. These were that Polish decorations could be worn as brevets, Polish technical insignia could be worn, and that the term Polish units 'incorporated into the RAF would be changed to 'Polish Squadrons with the RAF'.

The British were crystal clear how far they were prepared to go in their negotiations, while the Polish side as one reviews the situation emerge as at best careless and sloppy, possibly because they were increasingly desperate to address a deteriorating morale issue in France. One can also argue that the newly formed Polish staffs in France, none of whom spoke English, were simply overworked and lacking finesse in negotiations. But inevitably there has to be a contrast to the Polish-British Naval agreement. The Polish naval personnel were treated as fully armed allies and not as escaping refugees. While miniscule compared to the Royal Navy the high degree of professionalism of the Polish crews and the epic escape of the submarine ORP Orzel attracted favourable attention in a service which seemed far more open to foreign allies than the British Air Ministry.[16] The Polish warships began operations out of British ports even before the September Campaign was finished and their performance was accepted as being on a par with Royal Navy expectations. Financial issues for the upkeep of the ships as well as pay for personnel were all expeditiously addressed. The Polish Naval personnel all continued to wear pre-war style uniforms. They kept their Polish ranks and did not take an oath of allegiance to the King.

The PAF were very much aware of and influenced by the situation wherein the Polish Naval units were fully engaged in combat operations and enjoyed cordial relations with the RN in contrast with the humiliating position of the PAF as supplicants to the Air Ministry.

Given the inchoate confusion in France and the contrast with the civility and order in the United Kingdom it is hardly surprising that the Poles pushed hard for moving as many as possible of their aviation personnel to Britain as quickly as possible.

In May and early June 1940 as the whole western alliance was reeling under German blows in Norway, Holland, Belgium and of course in Northern France, and as Chamberlain had been replaced by Churchill, Sikorski finally acceded to the final British wording and on 11 June 1940, signed the agreement which accepted the British conditions.

Pilots from 303 Squadron

Why at such a late date, after the fine performance of the Polish land and naval units in the Norwegian campaign, such a disgraceful agreement was signed by the Polish Prime Minister and Commander-in-Chief, remains a mystery.

This was the end of the first period of the Polish Air Force presence in the United Kingdom. It was a very painful time for the Poles, dispirited by the defeat in September and very much aware that they were viewed by their allies as 'pauvres polonaises'. The air personnel were viewed as a burden to be shared with the French, while their competence was distrusted. During the Phoney War there was little urgency or necessity for the Poles to be made combat ready. Slow as the French were in arming Poles the fact is that Polish fighter units were entering operations in France, while at RAF Eastchurch the Poles were still learning English and King's Regulations, square bashing and admiring British planes from afar.

The capitulation of France, the threat to the British Islands and the reports of fine performance by the Polish pilots in the French campaign led to a dramatic re-appraisal.

But this short period, of less than 8 months in duration in a war of well over five years, determined the perception of the history of the Polish Air Force in the United Kingdom. They are consistently portrayed as a group of refugees who, on their own initiative, flocked to Britain and volunteered for service with the RAF.[17] In fact the Polish personnel, all pre-war professionals, did not see themselves as volunteers in the RAF at all, though many treasured their association with the Royal Air Force.

But how did the British view them in 1940?

A Foreign Office memo of January 1940 discusses the problems of moving the Poles to Britain. It speaks to the 'Transfer of Polish air personnel from France to the United Kingdom'.[18] Specifically addressing the question as to the 'The arrangement reached in Paris last October with the Poles and the French by Air Vice-Marshal Evill was '*that the Polish Air Force personnel already in France shall be divided up under Polish direction and half of it sent forward to England*'.

In May 1940 the RAF Liaison Officer for contacts with Poles minuted his superiors in a memorandum entitled "Polish Air Force Contingent in England". He expressed his concerns at some length:

'I am extremely perturbed over the present situation of the Polish Air Force Contingent in England, and I consider it very likely that a justifiably explosive representation will be made on the subject by the Polish Government in the near future'.

Now why would the Polish Government's explosive representation be of any concern to a Royal Air Force officer about his officers and men, unless he accepted the fact that they were in fact part of the Polish Air Force? He goes on to write of:

'. . . some 200 officers and 2000 airmen of the Polish Air Force serving in our RAFVR . . . I cannot help feeling that there must be

a growing feeling of impatience and unrest amongst so large a body of men whose sole aim in coming here was to help the Allied cause in their particular sphere of the air and who at this crucial moment find themselves limited to such duties as foot drill, guarding their station, lectures, etc. This must rankle much more since their compatriots who elected to work with the French are either flying operationally or serving with their army in the field, and the French express greatest admiration for their efficiency, usefulness and enthusiasm'.[19]

There is an expression, 'follow the money'. In May 1940 the British Treasury refers to the fact that on 15 November 1939 they undertook to provide credits for the Polish personnel and equipment. Why would the British Treasury expect reimbursement (from the credit advanced to the Polish Government) for capitation rates, aircraft on flying basis and mechanical transport on a mileage basis if these were in fact RAF personnel?[20]

Furthermore, the Royal Air Force accepted that the Polish Air Force Headquarters in Paris would send official inspectors to Eastchurch and the Poles chose Major General Wladyslaw Kalkus who did not speak English!

It is absurd to think that in early 1940 every month hundreds of Poles deserted the Polish Air Force in France to come to the United Kingdom in organized groups to be volunteers in the RAF.[21]

Second period
June 1940 to April 1944

But everything changed with the French capitulation and the evacuation of the remnants of the only recently formed Polish Army to Britain. This included the 5,000 Polish airmen who had not originally been selected for transfer to Britain who now found themselves in the United Kingdom. The British referred to them as the "French Poles" as opposed to the "British Poles". Regardless, they were all now in Britain

302 Squadron Spitfire

and whatever the British constitution, unwritten as it was, they were physically present and given the situation in which the United Kingdom found itself, important to Britain's defence and its policies. In particular the Polish dowry of an extensive network of intelligence agents on the Continent of Europe was a big asset.[22]

Churchill on 2 July 1940 minuted his staffs, 'In principle we are to make the most of the Poles. They should be assembled, made comfortable, and re-equipped as soon as possible'.[23]

On 12 July 1940, General Zajac much to the dismay of the British Air Ministry, issued orders that the newly arrived (French) Poles were not to enrol in the RAFVR. This was most likely due to the fact that the 'French Poles' were unwilling to take an oath of allegiance to the King and very bitter about their status as pilot officers. However, the British could not impose the first, and the Poles could not correct the second. Possibly the instruction came down from Sikorski.[24] On 18 July 1940 General Zajac resigned as Commanding Officer of the Polish Air Force, but in practical reality little changed. The British

posture was to continue treating all Polish air personnel as if they were in the RAFVR, whether they had signed in or not.

In June 1940 the British military situation had changed dramatically and Britain, having decided to continue the war, was in mortal peril. The RAF's fighter squadrons had taken very heavy losses in France and in protecting the British evacuation from Dunkirk. The British were short of pilots though the production of planes was keeping up with wastage. The Air Ministry was culling pilots from all different commands,.and, since the Polish fighter pilots in France had done a credible job, which was noted by the British, the net was cast wider. A RAF internal memo spells out on 4 June 1940 [that is well before the final evacuation from France on 22 June] that 'in view of the present shortage of fighter pilots, D of I has suggested that we should make use of the experienced Polish flying personnel which is now in this country. You will see from minutes that there are upward of 70 experienced Polish fighter pilots available. The Poles are apparently willing to agree that these pilots should be taken over by us and used in British fighter squadrons. I think it would very foolish not to accept this offer'.

Polish pilots originally destined for the light bomber squadrons but with some proficiency in English were inserted into RAF squadrons.[25] Polish fighter pilots who had flown in France and been evacuated began to train in all Polish units, albeit with heavy RAF personnel supervision. The British needed fighter pilots but were unhappy about the Polish negotiating position of striving for complete national autonomy. As the Poles were negotiating a new agreement the British were obviously preparing for a fight for their life. On 6 July 1940 the RAF HQ document that, 'It has been decided that on Polish (Fighter) Squadron shall be formed in Fighter Command from the experienced personnel recently evacuated from France. This will be designated as 302 (Polish Fighter) Squadron, Royal Air Force'.[26]

Sikorski now in Britain, realized that he now had a stronger political, though not necessarily a military, negotiating position and through General Kazimierz Sosnkowski negotiated hard for independent status for the Polish Armed Forces, to which the British War Ministry agreed to, but which the Air Ministry strenuously opposed. It proved easier for the Poles to negotiate a reasonable land army agreement than to renegotiate the air force one, just signed by Sikorski, albeit in different circumstances. As a result of the changed situation the seminal military agreement with regard to the air force was short of what the Poles aspired to, but conceded more than the Air Ministry would have wished. It also should be emphasized that General Kazimierz Sosnkowski, who now conducted most of the overall Polish-British military discussions, stipulated that the largest Polish air component operational unit would be a squadron. However, he strenuously argued that there should be an autonomous Polish army co-operation squadron assigned to the Polish land forces in Scotland, under Polish command, and essentially won the point.

The British position was well expressed by Sir Cyril Newall (Chief of Air Staff 1937-1940) in a letter to General Sosnkowski:

'We attach great importance to the maintenance of the status of the Polish Armed Forces as those of an independent and sovereign state, and we would not wish to differentiate the position of the Polish Air Force from that of the Polish Army and Navy, except in so far as operational considerations make a very close liaison with the Royal Air Force essential'.

From an objective view this was a reasonable point. Whenever form

interferes with function, the results are deplorable. But the British insisted on more than function, their views which prevailed were in fact contrary to their statement of treating the Polish Air Force as analogous to the Polish navy and land forces.

Newall also wrote in the same letter 'we welcome the proposal that an Army Co-operation squadron should also be formed, and that it should co-operate with the Polish Army in the field, under the operational control of the Polish Commander, and standing in the same relation to him as an 'Air Component' squadron acting with a similar formation of the British Army'.

It has to be also emphasized that given the dire straits in which Britain found itself in the summer of 1940, the amount of time given to the Poles by many in the British Government was considerable and in most instances very sympathetic unless it was perceived as inconsistent with British policies. Also at the conclusion of the Battle of Britain when the invasion crisis had passed, though the blitz continued, the Air Ministry became very accommodating and flexible in their interpretation of the agreement.[27]

The British were aware of the Polish position and in a summary on foreign Allied air personnel dated 29 July 1940 (ie before the August agreement was signed) noted. 'Although there are now nearly 9000 Polish air personnel in Great Britain. The formation of additional squadrons was delayed by the sudden decision of the Polish Government to press for a Polish Air Force separate from the RAF. This has now been agreed in principle, the RAF retaining control so far as operations, discipline, finances, etc, are concerned and a new Polish fighter squadron is forming today (22nd July) and a second is due to be formed on the 24th of July'.[28]

On 5 August 1940 the Polish Prime Minister, General W Sikorski and the British Prime Minister, Winston Churchill signed the Polish-British Agreement 'respecting the Polish Forces in the United Kingdom'. It is important to note that Article 1 of the agreement spells out that:

'The Polish Armed Forces (comprising Land, Sea and Air Forces) shall be organized and employed under British command, in its character as the allied High Command, as the Armed Forces of the Republic of Poland allied with the United Kingdom'.[29]

The Polish-British Military Agreement of 5 August 1940, in practice did little to enhance the Polish Air Force as an autonomous national force, but it did build a symbolic foundation. While the Polish General Staff acceded to British operational control and combined disciplinary jurisdiction they also agreed to accept the financial obligation from the credits granted to the Polish Government.

A nagging issue which was never completely resolved was the question of rank and promotion. The RAF authorities held firmly to the position that rank was a function of responsibility and part of the overall issue of RAF operational control. While the Polish personnel were no longer in the RAFVR, the pattern of functional rank, pay and combat assignments was strictly adhered to by the British. Therefore while perfectly logical to the RAF authorities, Polish Air Force officers, many of the rank of major and even higher, who had operational and or staff appointments during the September 1939 Campaign, were now pilot officers pending a specific appointment or posting. The British essentially viewed the Polish Air Force – whether national or not – as having a new beginning in the United Kingdom. It was a tabula rasa. Nothing that had happened before the Poles arrived in the United Kingdom was of any significance to the Air Ministry in the Summer of 1940.

The young aircrew officers and non-commissioned personnel wrote an immortal tale of heroism on this tabula rasa, but the cadre of mid level and senior officers felt disenfranchised. They had in fact, for better or worse, fought in command positions in September 1939, they had provided the foundations for the training schools in pre-war Poland and had provided instruction for the young who were now winning accolades for the Polish Air Force. They were understandably dismayed by their treatment.

The elimination of the obligation to swear allegiance to the King was the first and most visible prerogative of Polish national sovereignty. A further British concession allowing the red-white Polish Air Force checkerboard to be painted on the cowling of planes in Polish squadrons was close to the hearts of all Poles, and not just airmen. Another symbolic issue which initially was ignored by the British was the sovereign Polish right that any award presented to Polish military, by the British, had to have authorization from the appropriate Polish authority.

Obviously the Poles strictly adhered to this, as did the British when the British were the recipients of Polish decorations. With time this convention was adhered to and was obviously always graciously granted.[30] Having noted that General Zajac had stepped down as General Officer Commanding the Polish Air Force, it is also important to note that this post was not continued under the new agreement, which restricted the Polish Air Force to having an Inspector of the Air Force. This post was now filled by Major General S Ujejski with the functional rank of Air Vice-Marshal.[31]

The excellent performance of the two Polish fighter squadrons in the Battle of Britain did finally pave the way for a more reasonable policy, particularly since the Polish Government had accepted that all salaries, equipment (eg planes) would be a Polish debit. In March 1941 after prolonged interventions by Sikorski with Sir Archibald Sinclair, the new Secretary of State for Air, a compromise of sorts was reached. All Polish Air Force officers were granted 'permanent war rank' which was one step below their Polish rank. In other words a Polish major was automatically a RAF flight lieutenant but if assigned to a function which had a higher RAF functional responsibility he would for the time of holding that post also have a higher functional RAF rank.

However, he could never drop more than one increment below his Polish rank. Also at this point the officers of the Polish Air Force became entitled and expected to wear their Polish ranks on their collars. All non-commissioned officers were given ranks equivalent to their Polish grade, except that warrant officers were held up at a sergeant level for six months.

It is hardly surprising that many younger officers, Polish second lieutenants or lieutenants (pod-porucznik or porucznik) who had achieved success in the fighter squadrons and were often already in command of squadrons, and held functional ranks of squadron leader, failed to conform to this order. Such is human nature.[32] From 1939 to August 1940 the relationship between the two allies as far as the air force was concerned was that of a poor, close to disreputable family member whose presence was at best tolerated but always with the hope that good manners would lead to at least being quiet at the end of the table. From August 1940, at the height of the Battle of Britain, until April 1944 the gallant exploits of the Polish fighter squadrons, and the heroic participation of the four Wellington-equipped bomber squadrons

in the offensive against Germany earned the Polish ally respect and good will. During all this time, General Sikorski spared no effort to build up his service

305 Squadron Mosquitos

and to develop training bases and command posts.

In July 1941 the archives of DAFL show a positive response to the Polish request that Polish officers having completed their tour of combat missions be allowed to serve in Group and Command headquarters as well as at Staff College.[33] What ensued in that short year was an example of amazing degree of harmony and trust between the Royal Air Force and the Polish Air Force after a very sobering beginning. This was at every level, from the high corridors of the Air Ministry, the RAF Home Commands and on down to the squadron level. It was a mutual esteem that was earned by the bonds of fighting in the same cause. Polish officers and Polish crews were national and Polish wings began to be formed but the operational functions were integrated.

1943 was a watershed year for Polish political fortunes. In April 1943 the discovery of mass graves in German occupied Russia, near Katyn, led to a break up of the very recently diplomatic relations between the Polish Government and the Soviet Union.[34]

This short interlude of restored diplomatic relations had allowed many thousands of Poles to leave the Soviet Union. In addition to the famed 2 Corps, many thousands of young lads had volunteered for the Polish Air Force and as the war ground on they began to fill out the ranks of the bloodied Polish squadrons.[35] In July 1943 the Polish Prime Ministry and Commander in Chief, General Wladyslaw Sikorski, was killed in a plane off Gibraltar.[36] His successor as Commander-in-Chief (but not prime minister) was General Kazimierz Sosnkowski.[37]

At this point, General Ujejski resigned as Inspector of the Polish Air Force and was quickly succeeded by Colonel Mateusz Izycki who was shortly promoted Major General and also held the functional rank of Air Vice-Marshal. He proved himself to be an adroit negotiator, understood British methods, and by April 1944 had succeeded in preparing a new Polish-British air agreement.

Third phase
April 1944 through July 1945

The third phase of the Polish Air Force's legal status in the United Kingdom occurred on April 1944 when the British took one more careful step in acceding and expanding the original agreement about the national character of the Polish Air Force. The following preamble is an excellent summary of the many points of the new agreement.

'Desiring to make fresh provisions for the organisation and employment of the Polish Air Force in association with the Royal Air Force, as well as for the exercise of jurisdiction over members of the Polish Air Force in the United Kingdom or any territory outside the United Kingdom which is under the authority of the Government of the United Kingdom'.

While many issues were now ceded to the Polish High Command, such as complete disciplinary authority, it still spelled out that the 'operational control of units of the Polish Air Force shall remain vested in the Air Officer Commanding-in-Chief of the Royal Air Force Command concerned'.[38]

Major Gneeral Izycki's position now underwent a significant name change. He became the Commanding Officer of the Polish Air Force, and the staff of the Inspector was enlarged and became the Polish Air Force Headquarters.

It should be emphasized that the Royal Air Force went out of their way at this point to address the spirit and not just the words of the new agreement. The British Air Ministry sent a memorandum to all Commands stipulating that 'each Royal Air Force Command, Group and Station Headquarter ensure the provision of training facilities for Polish Staff Officers'. The memorandum pointed out that 'The Polish Air Force is serving within the framework of the Royal Air Force and all its units operational and non-operational are under the control of the RAF Commands concerned. Except for one wing in the 2n TAF the Polish Air Force has no executive control above squadron level'.[39]

In July 1944 a very important, but nearly unnoticed agreement was signed by the Polish and British Governments. In the words of the Secretary of the War Cabinet Allied Forces (Official) Committee the agreement made 'fresh arrangements for the attribution of expenditures incurred in the application of the Agreements and Protocols which have been concluded between the two Governments in London regarding the organisation and employment of the Polish Armed Forces during the present war'. In Article 1 the agreement stated:

'The Government of the United Kingdom will not, as from the date of the signature of this Protocol, claim reimbursement of the cost of the equipment (including the supply of war material) and of the maintenance of the Polish Armed Forces by Departments or agencies of the Government of the United Kingdom'.[40]

The growth of the Polish Air Force and its ubiquitous presence was merely limited by the manpower shortages in the Polish military in exile. While there was a push to recruit suitable candidates from the land forces and the creation of a Polish women's auxiliary component, the final results were inevitably short of what the Polish Air Force Headquarters aspired to, and which was well within the limits of what the British were prepared to accept.

The very supportive attitude of the British Air Ministry and of the various Command staffs, to say nothing of the Air Chief of Staff, allowed the Polish air personnel to avail themselves of experiences in various command positions including an Air Force Staff College.[41]

In spite of the major attrition in the bomber squadrons, by war's end the actual roll call in the Polish Air Force was close to 14,000 versus the 9,000 who arrived on British shores by June 1940.

But as the war was drawing to a close and possibly also as a reflection of the Yalta Big Three Conference, the Air Ministry combined with the Foreign Office to start the process of phasing down the training of new Polish air crew. Both Sir Archibald Sinclair and Anthony Eden in March 1945 sent a memorandum to the Prime Minister, Winston Churchill, urging a reduction in the intake of Polish aircrew for training. The fact is that the British in March 1945 were indeed phasing down their training capacity. The Air Secretary wrote to the Foreign Secretary urging a joint intervention with Churchill in the following memorandum:

'… we are now receiving an intake of 125 Polish aircrews a month into our training organisation, although an intake of 35 aircrews a month would be sufficient to meet the Polish aircrews requirements, including the build up to 17 squadrons in Stage II. At the time we are building up this large surplus of Polish aircrews, shortage of manpower on the ground is

compelling us to contemplate the rolling up of squadrons'.

'We foresaw this situation last year and cut down the intake of Poles as well as of other Allies into our training organisation. The Poles, however, appealed to the Prime Minister and he ruled that the Polish intake must be maintained as a matter which was political in the highest sense'.

Churchill on 3 April 1945 responded in his distinctive manner to both.

'We shall see much more clearly on this field before the month of April is over. Meanwhile, no change, but bring up then'.[42]

It seems logical and intuitive to attribute this postponement to the Churchillian last ditch attempt to get the Russians to abide by their agreements at Yalta. On 3 March 1945 Churchill wrote to Roosevelt:

'At Yalta we agreed to take the Russian view of the frontier line, Poland has lot her frontier. Is she now to lose her freedom?'.

Churchill further admitted Britain's relative impotence when he continued in his message:

'That is the question which will undoubtedly have to be fought out in Parliament and in public here. I do not wish to reveal a divergence between the British and the United States Government's, but it would certainly be necessary for me to make it clear that we are in presence of a great failure and an utter breakdown of what was settled at Yalta, but that we British have not the necessary strength to carry the matter further and that the limits of our capacity have been reached'.[43]

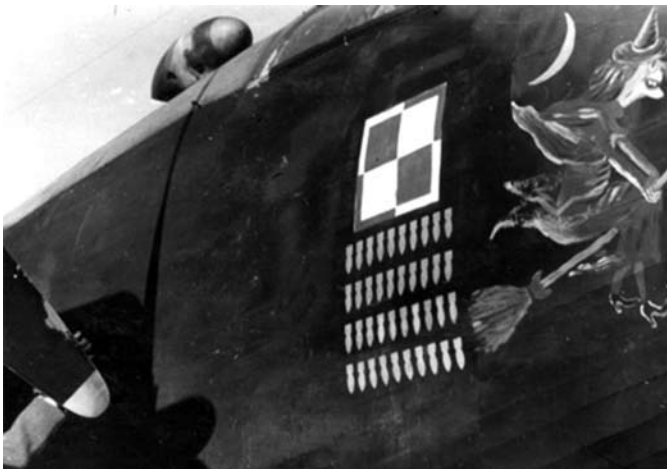
We learnt relatively recently as the National Archives opened the files, that at this same time, Churchill requested his Chiefs of Staff to prepare plans for 'Operation Unthinkable' which in the words of Lord Ismay, Deputy Minister of Defence, had the overall objective of 'imposing upon Russia the will of the United States and British Empire'. The Joint Planning Staff of the War Cabinet further spelled out, 'Even though *the will* of those countries may be defined as no more than a square deal for Poland'. In this plan which was presented to the Prime Minister on 8 June 1945 the Polish Armed Forces in the West figured prominently.[44]

In hindsight we know how disinclined Truman and his post Roosevelt administration was to get involved in European issues particularly with Japan still to be defeated. We also know that Britain by itself could not meet this challenge and the British public was not merely war weary but still under the influence of war time propaganda of the adulation of Stalin and his Soviet army.[45] But it is also obvious from all secondary sources that the Americans worried far more about British Imperialism than Soviet hegemony in Eastern Europe, and were vehemently critical of British intervention in Greece. Two events followed in quick succession. In July 1945 the two allied western powers recognised the Warsaw based 'Lublin' government as the provisional government of national unity of Poland pending free and unfettered elections. On 26 July 1945 the British electorate gave a landslide victory to the Labour Party and thus made Clement Attlee the new Prime Minister.

This began the fourth chapter of the legal status of the Polish Air Force in the United Kingdom.

Fourth phase
July 1945 through December 1946

The facts confronting the British after 5 July 1945 were that they had helped to create a large, very well armed army, many thousands actually based on their own soil, that was loyal to a government which the British no longer recognized. This made all British-Polish allied forces agreements moot. It was the largest private army on British soil in the history of Britain. The British



Missions completed, recorded on the side of a 301 Sqn Wellington

slowly unravelled the Polish chain of command and after rescinding their recognition of the Polish Government they also shortly announced that they would no longer recognize the post of Commander-in-Chief (General Tadeusz Bor-Komorowski who had succeeded General Sosnkowski) or Minister of Defence (General Marian Kukiel).

The issue was stark. The military agreements had been signed by the British with a Polish Government in London. Most issues of discipline were handled by Polish military courts. Who would now exercise legal control. At least as long as the Poles were in uniform, they would obey their officers, even if the so-called legal issues were no longer valid. The provisional government of so-called national unity in Warsaw, dominated by communists initially urged that the Polish Armed Forces return as a coherent organized force. The British certainly strongly favoured the return of the Poles to Poland, but such a return was certainly not on the cards for the Soviets and very shortly all kinds of obviously impossible conditions began to be offered.

The next two years saw a bizarre diplomatic dance in which the parties involved, namely the British, the Polish communists, the Soviets and of course the Poles in the west all attempted to gain their ends. The Polish Armed Forces wanted to stay in the west as organized units at least until the called for 'free elections' were held. The Poles in the West correctly assumed that the elections would be rigged and that following such a dénouement the status of the Polish Armed Forces would not be changed and that possibly Western policy would also be modified.

By early 1946 the Polish Provisional Government notified the British ambassador that the Polish Armed Forces in the west were no longer part of the Polish Armed Forces and all who wished to return had to apply to the Polish Consulate in London for permission to return. By late 1946 the British officially notified the Polish General Staff that the time had come to demobilise the Polish Armed Forces. Since the British were aware that many thousands of Polish military were not prepared to go back to a Soviet communist dominated Poland they created the Polish Re-Settlement Corps in June 1946 to prepare the Polish military for demobilization and civilian training and life in the United Kingdom. One of the most impressive British initiatives was the formation of the Committee for the Education of Poles in Great Britain, which funded stipends for military personnel and their dependents to pursue education at British technical schools, polytechnics and universities. The author of this paper was funded for six years to pursue medical studies.[46]

In January 1947 the Polish Communists held elections in Poland, which gave overwhelming majorities to the communists and were universally condemned as rigged.[47]

The close and warm relationship between the RAF and the Poles continued. In 1949 a lovely monument

to the Polish Air Force was unveiled at Northolt. The British also published their elegant book on the Polish Air Force evocatively titled – Destiny Can Wait – with a very gracious foreword by Marshal of the Royal Air Force Viscount Portal of Hungerford GCB DSO MC who was Chief of the Air Staff through most of the war.

In the official history of the Royal Air Force an elegant tribute is also given:

'All these allied contingents gave something unique; and if we mention especially the Polish airmen, it is not only that their contribution was the greatest in size – with fourteen squadrons and some fifteen thousand men, including their own ground staff, besides many pilots in the British squadrons – and that their fighting record in all Home Commands and Europe and the Mediterranean was unsurpassed, but also that victory brought them no reward only further exile from home and loved ones they had fought so long and bravely to regain'.[48]

Yet, in the same volume, there is no mention that the Squadrons of 131 Wing of No 84 Group comprising 302, 308 and 317 are Polish. This carelessness or worse in an official history adds to my theses that ambiguity about the Polish Air Force is endemic.[49]

Accounting

While men fought and died, accountants kept books. Polish/British financial negotiations began in April 1939.[50]

On 7 September 1939 and subsequently in June 1940 the Polish Government received cash credits from which the costs of maintaining the Polish Armed Forces in the West were debited. At the end of the war in Europe these accounts began to be settled.

In December 1945 the Air Ministry sent a letter to the Secretary of the Treasury. The gist of this was the fact that the Polish Air Force Headquarters on 20 November 1945 stipulated to the following Polish debit for Polish Air Force personnel costs. The cost of supplies, planes, bombs and petrol had been deemed as non recoverable due to the Lend – Lease protocol signed on 29 June 1944.

'The total charges against the Polish Military Credit in respect of supplies and services rendered by the Air Ministry to 29th June 1944 amounted to 42,107,637 Pounds and twelve shillings and one pence'! This was the date when the Polish-British agreement regarding the 'attribution of expenditures' was signed. The Air Ministry spelled out 5,434,255 (plus change) remained a charge against the Polish credit, while the balance of 36,673,381 was 'now deemed to be none recoverable under the Agreement'.[51]

Polish sources also stipulate to the Polish debt for their armed forces. Specifically the debits for the Air Force are spelled out in two Polish studies. Personnel costs of the Polish Air Force from August 1940 to July 1945 being the date when the British rescinded recognition of the Polish Government in London in favour of the provisional government in Warsaw are: £8,269,873, 11 shillings and 11 pence. This sum is significantly bigger than the sum cited in the National Archives file. Kalinowski writes that the sum of £39,566,437, 16 shillings and 8 pence was described as cancelled as a result of the 29 June 1944 Anglo-Polish agreement. Again this sum is larger than the National Archives file. Kalinowski writes that overall cost of the Polish Air Force in the United Kingdom to December 1945 amounted to approximately L 107,650,000.[52]

It probably would require a chartered account to do a forensic analysis of the disparity but from a historical point of view these differences while financially significant are actually irrelevant. They prove that both partners accepted the reality that the Polish Government was

Spitfire XVIs of 308 Squadron

legally responsible for its air personnel which fought in the West.

It is not quite clear what the final debit was. But in the negotiations by the British with the Polish communists over Poland's debit and the question of how much Polish Gold would be retained by the British to recover the debt the following is the figure: military credit (all services) 122 Million Pounds of which 75 was deleted under the Polish-British military agreement of June 1944.

Salaries etc of Polish Military was estimated at 47 (plus) million.[53]

Postscript
It may be pertinent to summarize the major British decorations awarded to Polish Air Force personnel.

Generals Stanislaw Ujejski and Mateusz Izycki were both honoured and appointed Honorary Knights Commander of the Order of the Bath, Military Division in January 1941 and October 1945 respectively. Lt General Jozef Zajac was appointed Honorary Companion of the Order of the Bath, Military Division, in December 1944 but this was for services as Polish GOC in the Middle East. Information from Central Chancery of the Orders of Knighthood, St James's Palace, London.

In addition Polish air personnel were awarded 8 DSOs, 14 OBEs, 186 DFCs and 68 DFMs.

Notes

1 Adam Zamoyski, The Forgotten Few: The Polish Air Force in the Second World War, New York, Hippocrene Books, 1995. Robert Gretzyngier and Wojtek Matusiak, Polish Aces of World War 2, Osprey, Botley, 1998. Robert Gretzyngier, Poles in Defence of Britain. A Day-by-Day Chronology of Polish Day and Night Fighter Pilot Operations: June 1940-July 1941, Grub Street, London, 2001.

2 Simon Newman, March 1939: The British Guarantee to Poland, Oxford University Press, London, 1976. Elizabeth Turnbull and Andrzej Suchcitz, eds. Edward Roland Sword. The Diary and Despatches of a Military Attaché in Warsaw, 1938-39, Caldra House Limited, Hove, 2001. See also, Roderick Macleod and Denis Kelly, eds. Time Unguarded. The Ironside Diaries, 1937-1940, David McKay Company, Inc. NY. 1963. Anita Prazmowska, Britain, Poland and the Eastern Front, 1939, Cambridge University Press, London, 1987. Anna K Cienciala, Poland and the Western Powers, 1938-1939, University of Toronto Press, Toronto, 1968. British War Blue Book. Documents Concerning German-Polish Relations and the Outbreak of Hostilities between Great Britain and Germany on September, 3, 1939. His Majesty's Stationery Office, London, 1939.

3 The best English language accounts of the background of the formation of the Polish coalition government in exile is to be found in Anton Polonsky, Politics in Independent Poland, 1921-1939, Oxford University Press, London, 1972, pp 502-505.

4 General W Sikorski was a great advocate and proponent of aviation though possibly overtly optimistic and uncritical and under the influence of the 'big bomber' potential. See General Wladyslaw Sikorski, Modern Warfare, New York, Roy Publishers, 1943. Chapter II pp 168-207, The Air Force and Anti-Aircraft Defence. Also see, Robert M Ponichtera, "The Military Thought of Wladyslaw Sikorski", Journal of Military History, 59 (April 1995): 279-302. On March 15 1940 General Sikorski

was appointed honorary Knight Grand Cross of the Order of the British Empire. Information from Central Chancery of the Orders of Knighthood, St James's Palace, London.

5 This was due to the attempt made by Smigly-Rydz to anchor the last stand against the Germans on the Romanian border with the hope and some expectation that supplies from the west would come through the Romania ports. It was also due to the fact that the Polish Government was led to believe that French Morane-Saulnier fighters and British Fairey Battles were being shipped through Romania ports for delivery to Poland. Hence those aviation units which had suffered severe losses had their personnel moved to the Romania border to take on incoming equipment. The Soviet invasion on September made all such plans moot and the loss of bases and territory forced all Polish military that had organic motorized support to Romania. A very similar situation confronted the RAF in France in June 1940. Once bases and support services were lost there was nothing more to be done. In addition to ground personnel and aircrew that had lost their planes, a considerable number of operational planes were also flown to Romania. Statiev, Alexander, Antonescu's Eagles Against Stalin's Falcons: The Romania Air Force, 1920-1941. The Journal of Military History, Vol 66, No 4, October 2002, "about two hundred Polish aircraft that took refuge in Romania after Poland fell to the Germans in 1939", p 1087. Also, Mark Axworthy, Cornel Scafes and Christian Craciunoiu, Third Axis, Fourth Ally, Arms and Armour Press, London, 1995. "When Poland fell in 1939 more than 200 Polish aircraft were flown to Romania", p 277. The Royal Romanian Air Force [Fortele Aeriene Regale ale Romaniei or FARR] was thus able to equip two fighter squadrons with PZL-11Cs, two medium bomber squadrons with PZL 37A and B and one light bomber squadron with PZL 23. The fact that over 200 Polish military aircraft flew into Romania should not have escaped the notice of the British military attachés. Yet the myth of the Polish Air Force being destroyed on the first day of the War persisted. See also Endnote # 8.

6 Wojciech Roek, Odyseja Skarbu Rzeczypospolitej. Losy zlota Banku Polskiego, 1939-1950, [The Odyssey of Polish Gold], Wydawnictwo Literackie, Krakow, 2000. Gold bullion of the Polish Emission Bank was evacuated to France in 1939 but some was used in Romania for use in aiding Polish military, pages 422-454. In September 1939 the Poles agreed for the following exchange rate: 1 zloty = 20 lei. Total exchanged was 11,733,702 zloty. After the War there were prolonged negotiations between the British Government and the Polish Provisional Government in Warsaw regarding how much of the gold needed to be transferred to the British as payment for credits advanced to the Polish Government for military and civilian expenditures. See, section – accounting.

7 The National Archives, London, henceforth cited as TNA FO 371/2315 and 22479 and 25243 eg. My father an Air Force officer was as many hundreds of other Polish military issued a false Polish passport, using an assumed name and identifying him as a civilian and also unable to perform military duties. On the basis of this passport he was issued a British entry visa in late October 1939. Hundreds of such visas were issued by a British consulate undoubtedly more than aware of the deception being practiced. It needs to be emphasized that the Romanians in general were also undoubtedly quite sentient of this deception.

8 This canard seems to have stemmed from a report by the Head of the British Military Mission to Poland in 1939, namely General Carton de Wiart VC found in TNA HS4/223 and 225. it should be emphasized that this Englishman, cast in a heroic mould, was a great friend of the Poles. His source appears to have been the Polish General L Rayski with whom he met on September 10th while still in Poland. See also Peter Wilkinson, Foreign Fields: The Story of an SOE Operative, Tauris, London, 1997, p 79. See also the German historian, Cajus Bekker, "Despite all assertions to the contrary, the Polish Air Force was not destroyed on the ground in the first two days of fighting. The bomber brigade in particular continued to make determined attacks on the Germans forces up to September 16th". Bekker does not make it clear that the reasons for the 16th being the last day was in fact the Soviet invasion in the early hours of September 17th which forced an organized evacuation of all planes and personnel to Romania. See also Jeremy Black, editor, The Second World War. Volume 1 The German War, 1939-1942, Chapter 1 Michael Alfred Peszke, "The Forgotten Campaign. Poland's Military Aviation in September 1939", Ashgate Publishing, Burlington, Vermont USA and Aldershot, England, 2007, pp 1-72.

9 Alan Brown, Airmen in Exile, The Allied Air Forces in the Second World War, Sutton Publishing, Stroud, 2000. The excellent book conveys the deprecatory assessment of Poles in the corridors of power in the Air Ministry. The innate insular and xenophobic attributes were further inflamed by the one RAF expert on all things Polish, namely Squadron Leader Landau. See also TNA AIR/4213 from March 1940.

10 Destiny Can Wait The Polish Air Force in the Second World War, Heinemann London, 1949, pp 373-375. It is obvious that the formation of Polish air force squadrons in the UK in late 1939 and early 1940 was seen as a nuisance by most of the Air Ministry and the RAF staffs. The question has to be raised, why in those circumstances as early as October 1939 the British so readily agreed to form two Polish light bomber squadrons. A plausible answer would seem to be that the Battles were already seen by the British Air Ministry as being owned by the Poles. See, TNA T 160/880 when in June 1939 Sir Kingsley Wood (Secretary for Air) writes to Lord Halifax, "we have agreed to release 100 Battle aircraft to the Poles". On 1st July 1939 Polish Air Attaché in London telegrams to Warsaw that the British had agreed to transfer 100 Battles plus all equipment; as well as 14 Hurricane to Poland. APISM LOT AI 2/15. The author would appreciate if any reader could shed more light on this issue.

11 George Kacewicz, Great Britain, The Soviet Union and the Polish Government in Exile (1939-1945), Martinus Nijhoff Publishers, The Hague, Boston and London, 1979, "Polish Forces in Britain: Legal Status", pp 52-70.

12 See the following for details of the service expectations in the RAF Volunteer Reserve, Polskie Sily Zbrojne w Drugiej Wojnie Swiatowej. Tom II Kampania na Obczyznie, czesc 1. Gryf Printers, London, 1959, pp 203-206.

13 In his post war memoirs General Zajac hardly mentions the negotiations over the air force agreement. Jozef Zajac, Dwie Wojny, op cit.

14 Archives of the Polish Institute and General Sikorski Museum, London. Henceforth cited as APISM LOT A IV 13b.

15 TNA WO 33/2339 gives the comprehensive text of the agreements pertaining to all 3 Polish services. The naval agreement signed on 18 November 1939 and the agreements on land and air forces signed in August 1940. This will be discussed later in the paper.

16 Winston S Churchill, Vol 1. The Second World War. The Gathering Storm, of the six volume The Second World War, London, Cassell & C Ltd, 1948 (English edition), wrote in his memoirs: "the young Polish Navy distinguished itself" and also that "the escape of the Orzel is an epic", p 345.

17 For many years the West Point Academy Museum exhibited the uniform of a Polish Air Force warrant officer from the period of 1943. The exhibit was captioned as follows: "After the fall of Poland many Poles who managed to escape or were at the time living abroad volunteered for Service with the British military". Also an exchange of correspondence with the editors of a prominent aviation journal in the United States their riposte to my correction regarding alleged Polish volunteers in the RAF was an insouciant reply that it not known how the Polish pilots identified themselves; and after all they were flying Hurricanes not PZL 11c. My reply was according to their logic the Poles became members of the USAAF when they got Mustangs (P-51) fighter planes.

18 TNA FO 371/24463.

19 TNA AIR 2/4213.

20 The first accounting for the expenses of the Polish Air Force in the United Kingdom is in T 160/1412 for the period ending December 1940. Captioned as "Statement of Charges for Services for Polish Air Force Squadrons and Units in the United Kingdom for the Period to December 31st 1940". This financial sheet of many pages lists four Polish bomber squadrons, five fighter squadrons (more were to come in 1941) and one Army co-operation squadron plus 18 OUT and detailed miscellaneous charges for salaries, barracks fuel, spares, bombs, and on and on. The grand total for period L6,267,150. The initial equipment of the 300 and 301 Bomber Squadrons with Battles is assessed as L870,000 per squadron. This figure is in the ball park of the sum of L1,500,000 cited in T160/880.

21 One of those Polish pilots was Janusz Zurakowski who writes: "I was reluctant to leave France and thought that the selection of pilots to

embark for England was too arbitrary. I spoke French, so naturally I was sent to England". Zurakowski leaves out the second fact of importance, namely that he was a pre-war Polish fighter pilot and instructor in the Polish Special Training unit of the Advanced Flying School at Ulez, near Deblin. Bill Zuk and Janusz Zurakowski, Janusz Zurakowski. Legend in the Skies, Crecy Publishing, Manchester, 2004, p 72.

22 Anglo-Polish Historical Committee, (Tessa Stirling, Daria Nalecz, Tadeusz Dubicki, eds). Intelligence Co-operation between Poland and Great Britain during World War II, Oregon, Portland, Vallentine Mitchell, 2005, Vol 1 AND, Polsko-Brytyjska wspolpraca wywiadowcza podczas II wojny Swiatowej. Wybor Dokumentow. Intelligence Co-operation between Poland and Great Britain during World War II, Vol II Documents. Naczelna Dyrekcja Archiwow Panstwowych, Warsaw, 2005.

23 TNA PREM 712/83781.

24 TNA AIR 20/1823.

25 The story of Zurakowski illustrates in a nut shell the evolution of acceptance of the Polish air personnel. Zurakowski, being a "British Pole", and thus a "bomber" pilot found himself culled to 152 Fighter Squadron on 5 August 1940. Later he was transferred to 234 RAF Squadron in which he fought throughout the Battle of Britain. By November 1940 there were 85 Polish pilots in RAF squadrons. After the Battle of Britain all Polish pilots eventually returned to Polish squadrons and with the influx of further new personnel, 6 other Polish fighter squadrons were formed in late 1940. The heroic tale of the "gallant few" who won the Battle of Britain does not reflect how close the outcome really was. RAF Squadron 234 was withdrawn from battle since 15 of the 22 pilots had been lost and of the original complement only 3 were left. Zurakowski had 4 confirmed air victories, one short to entitle him to the accolade of "ace". Since Zurakowski was in a RAF squadron and his immediate superiors were British his exceptional skills were recognized and in March 1941 he was posted to 57 Operational Training Unit in March 1942 to train new fighter pilots. He spent the next 9 months in various RAF training bases which also included the training of the influx of young Polish pilots. In December 1941 he finally got a posting to an all-Polish squadron, the 315 Deblinski. In April 1942 he was promoted to porucznik pilot with a RAF functional rank of flight lieutenant and took over command of a flight of the 306 Torunski Squadron. In June 1942 he was given the functional rank of squadron leader and took command of the 316 Warszawski Squadron. The squadron was one of three squadrons comprising the Polish First Fighter Wing. Again his expertise and experience was noted and he went to RAF Northolt as Sector Gunnery Officer. At this point in time it was an all-Polish base with a Polish base commander, the indomitable Colonel Mieczyslaw Mumler who commanded the Polish Poznanski Army fighter wing in September 1939. In July 1943 Zurakowski became deputy commander of the Polish Fighter Wing at Northolt and led its three squadrons on 46 combat missions. RAF authorities again took notice and in October 1943 Zurakowski was posted to the Royal Air Force Fighter Command Headquarters and placed in charge of tactics and training. After the war he became a test pilot for Gloster and famed for his "cartwheel" at Farnborough. Zuk, Bill, Janusz Zurakowski. Legends in the Sky, op cit, pp 119. As the war went on the British recognized and appreciated the qualities of the Polish personnel. Major Stanislaw Skalski took over the command of the 601 RAF Fighter Squadron in Malta. While in 1944 Colonel Alexander Gabszewicz during OVERLORD, commanded the 18th Sector which initially consisted of three Allied wings composed of nine fighter squadrons. Five were Polish, namely 302, 306, 308, 315 and 317; while 2 were RAF, one Belgian and one Royal New Zealand Air Force.

26 TNA 20/1823. Since the new agreement had not been signed, the British were quite correctly operating under the signed agreement of 11 June 1940, and the formal identification of the 302 and the 303 as RAF is legally correct. Unfortunately this persisted after the August 1940 agreement and even worse the identification of "Polish" tended to be ignored in many even official publications. It is a pleasure to read the correct captions of the two Polish squadrons which fought in the Battle of Britain in Mason's book. Francis K Mason, Battle over Britain, New York, Doubleday & Company Inc, 1969. In the index, they are cited correctly as: 302 (Polish) City of Poznan and 303 (Polish) Kosciuszko.

27 TNA AIR 8/295, 12 July 1940.

28 TNA AIR 8/370. These were the 302 (Poznanski)

and the 303 (Kosciuszko) squadrons. It is rather curious as to what the RAF authorities thought was being left to the Poles with the proviso of "etc". Certainly this memo regarding finances became moot since the agreement's Article 4 spelled out that "any costs incurred by or on behalf of the any Department of the Government of the United Kingdom in connection with the application of the present agreement shall be refunded out of the credit granted by His Majesty's Government to the Polish Government to finance the cost of maintaining the Polish military effort".

29 TNA WO 33/2389 and AIR 2/2413 also Destiny Can Wait, op cit, pp 377-382.

30 TNA Air 2/6154.

31 Major General S Ujejski was chief of the Air Section of the Polish General Staff in 1939.

32 The Polish military did not have a functional or brevet ranks system. There were salary adjustments concomitant with responsibility of command or function. In the army many divisions were commanded by colonels, and I know of at least one Army Commander (Army Krakow consisting of five infantry divisions) who was a mere major general, namely Antoni Szylling.

33 TNA AIR 8/295 80530.

34 Anna Cienciala, Natalia Lebedeva, Wojciech Materski, Katyn – A Crime Without Punishment, Yale University Press, 2007. Also Janusz Zawodny, Death in the Forest, The Story of the Katyn Forest Massacre, U of Notre Dame Press, First printing, 1962. Also Churchill, Hinge of Fate, p 760. Also in Sir Llewellyn Woodward, British Foreign Policy in the Second World War, Volume III, Her Majesty's Stationery Office, London, 1971, specifically Chapters XXXIX pp 154-217, XL pp 218-335 and XLV pp 490-558 which deal with Great Britain and Russo-Polish relations.

35 One of these was Alexander Maisner, who on being liberated joined the Polish Army and then transferred to the Polish Air Force in 1943. Finished pilot training and after the war was accepted into RAF service achieving the rank of Air Vice-Marshal. He was also president of the Polish Air Force Association based in London.

36 The accident remains controversial and the British RAF enquiry did little to reassure or answer the question; was it an accident or sabotage. TNA AIR 2/9234 and TNA PREM 13/264. If sabotage, then who was responsible and who was the intended victim; the Polish Prime Minister or Victor Cazalet MP, a local critic of Churchill's policy of seeming accommodation of Stalin at Polish territorial expense? See, Diaries of Sir Alexander Cadogan, 1938-1945, edited by David Dilks, GP Putnam's Sons, NY, 1972, pp 446-448. "Thursday 23 April 1942 Message from Joe (ie Stalin) about our visitor from Moscow who will give us a rough passage over the Treaty (which I hear is beginning to cause a stink amongst MPs egged on by Victor Cazalet)".

37 It is important to clarify the Polish constitutional position of the Naczelny Wodz in wartime. He was appointed by the President and only accountable to the President, not the prime minister and the cabinet and only for the duration of war. It was an issue of acrimony and misunderstanding in the British mass media. In March 1940 General Kazimierz Sosnkowski was appointed Honorary Knight Commander of the Military Division of the Order of the British Empire. Information from Central Chancery of the Orders of Knighthood, St James's Palace, London.

38 Destiny Can Wait, op cit, pp 383-389.

39 TNA AIR 2 37/90/96925.

40 TNA T160/399. This agreement signed by Raczynski and Cadogan is important in understanding the final accounting negotiations following the end of the war in Europe.

41 Destiny Can Wait, op cit, and J Cynk, op cit, both give detailed accounts of the Polish Air Force training and support services. TNA AIR 8/1155.

42 TNA FO 371/47662.

43 Kimball, Churchill and Roosevelt, p 565. Also, Churchill, Triumph and Tragedy, p 374.

44 TNA CAB 120/691. Also Lewis, Julian, Changing Direction: British Military Planning for Post-war Strategic Defence, 1942-1947, Sherbrook Press, London, 1988.

45 Sir Michael Howard, an eminent military historian and distinguished serving officer in WWII, wrote

(The Second World War in Perspective, RUSI, 150, No 4, 2005, pp 56-59) "… the belief that we surrendered Eastern Europe to the Soviets in Yalta is sheer nonsense. It was not ours to surrender. Soviet Armies were already in occupation and regarded these territories as the legitimate spoils of a terrible war. Similarly, any idea that the British and American Armies might have pushed the Russians back from already agreed occupation zones is equally fantastic. British and American troops, desperate to go home would have mutinied if called on to do anything of the kind, and done so with the full support of electorates that had, rightly or wrongly, learned to regard the Soviet Armed Forces with admiration and gratitude".

46 Michael Hope, The Abandoned Legion. A Study of the Background and Process of the Post-War Dissolution of Polish Forces in the West, Veritas, London, 2005. This is the only English language text on this sad event, but its title has to give some pause since the Polish Armed Forces in Exile were never called a legion.

47 Krystyna Kersten, The Establishment of Communist Rule in Poland, 1943-1948, University of California Press, Oxford, 1991, pp 285-344.

48 Hilary St George Sanders, Royal Air Force, 1939-1945, Vol 3. The Fight is Won, HMSO, London, Third Impression 1993, p 370.

49 Ibid, p 414.

50 TNA PREM 1/357, also see David E Kaiser, Economic Diplomacy and the Origins of the Second World War. Germany, Britain, France and Eastern Europe, 1930-1939, Princeton U Press, Princeton, NJ, 1980, p 308.

51 TNA T 160/1399.

52 The Official Polish post war report about the Polish Air Force, written by the Historical Commission, chaired by Colonel Olgiered Tuskiewicz in manuscript form promulgated in 1947. (Copy in author's possession); and the Franciszek Kalinowski, Lotnictwo Polskie w Wielkiej Brytanii, 1940-1945 [Polish Air Force in Great Britain, 1940-1945], Institute Litteraire, Paris, 1969.

53 TNA T 160/1399.

USAF personnel oversee electronic warfare mission data flight testing

Letter from America

By Gp Capt Carl Scott

We depend on our allies in the United States to deliver the influence we, as a Service, as a Nation, currently achieve on the global stage. Their arguments are, largely, our arguments; their perceptions, perhaps too frequently, foreshadow our own. It is my hope in this series of articles, to offer an insight, personal and flawed as it may be, into the debates which are shaping thinking in the United States. An occasional letter from America. In this first note, writeen in the summer of 2008, two key areas have dominated thinking in the United States: The contribution of the Air Force to current operations, and the balance between the capability required to meet that challenge and that of future wars, the second, related issue, was the implication of Russia moving forces into Georgia. A reminder that states will still play on the global stage, seizing advantage of perceived weakness or distraction.

Air power & counterinsurgency (COIN)

'…any major weapons program, in order to remain viable, will have to show some utility and relevance to the kind of irregular campaigns that, as I mentioned, are most likely to engage America's military in the coming decades … the perennial procurement cycle – going back many decades – of adding layer upon layer of cost and complexity onto fewer and fewer platforms that take longer and longer to build must come to an end.'

Secretary of Defense Robert M. Gates, May 13, 2008 (Remarks to the Heritage Foundation, Colorado Springs)

'…Our troops are taking a hammering. The current operational environment, counter-insurgency, irregular warfare against non-state actors, 'war amongst the people', is likely to prevail for the next twenty years. This is the infantry war. We should change the basis against which we resource and train, from large-scale interstate conflict to peace-enforcement, with a consequent change in balance of resource between the land, air and maritime environments. We need high calibre, well motivated and led soldiers, who can serve as social workers, medics and policemen, building infrastructure and intelligence networks, training the host nation, and we need a great many more of them. Our troops are taking casualties, too many casualties. They need protected mobility. They need counter IED capability, as an absolute priority. Resources need to be directed to meet their needs, not legacy cold war projects with no relevance in the current operating environment. We need to change with the challenge of the times. It is our moral responsibility in Defence to deliver a responsive, adaptable capability, or more soldiers will be lost, unnecessarily…'

How very true.

But if you want the troops to take a greater hammering, if you want to lose more bodies: withdraw airpower. Take the resource out of space and cyberspace.

Counter-intuitive as it may seem at first glance to the armchair warriors, it is space, cyber space, and air that is delivering success, that is allowing a small number of highly trained personnel to have a disproportionate effect on the battlefield, that is preventing the mass of deployed forces from becoming targets, hostages in their own sprawling encampments. It is these domains of warfare that deliver situational awareness, power projection, reliable communication nets, secure mobility, logistic resupply, and timely, accurate targeting. The persistence,

agility and precision that is required to deliver in the current operational environment is the gift of air and its associated domains. The soldier cannot achieve the persistence and precision, the flexible scale of force or the agility required to contend with the challenge of global networked, intelligent and informed opponents, without air.

Flooding the battlespace with more personnel, more infanteers, more logistics and staff officers, even if we could recruit, train and retain the great number of highly educated and fit individuals required, would only serve to increase the perception of invasion and occupation on the part of the host nation and his cultural allies. It would also increase the targets available to our opponents and our own exposure to the frailty and equivocation of our own media and politicians.

There is a debate raging in the capital of our greatest ally. Should resource be channelled into maintaining a strategic capability advantage over future opponents, exploring emergent technologies, fifth generation fighters and directed energy weapons, and the emergent domains, space and cyberspace, or should we focus on fighting the current war, on victory in Iraq and Afghanistan?

This is no mere intellectual exercise, heads have been taken. The Chief of Staff of the Air Force, and the Secretary for the Air Force, his civilian counterpart, have both been removed from post. Apparently as a consequence of failures in nuclear weapon handling, they would argue this was a consequence of their support for future programmes, holding the line on a strategic vision for the USAF,

General Norton A Schwartz, Chief of Staff, US Air Force

accepting the need to address today's conflict, but not at a price of losing the edge when the next major challenger arises. Defense Secretary Gates is drawing on his own experience in the Central Intelligence Agency to shape a new balance, driving through change in an Army that appeared to have wilfully curtailed its capacity to engage in COIN operations following the debacle of Vietnam[1]. He is seeking to ensure the relevance of the enormous investment, in blood and treasure, by the people of the United States. He is seeking to maintain the deterrent effect of its recourse to force, and avoid another embarrassing defeat for the global power.

His strategy appears to be working. General Petraeus has developed an effective formula for the conduct of COIN operations, the surge of troops into Iraq has reduced the levels of violence in target areas. It is a triumph for the Army and for Secretary Gates. The United States Air Force has become mired in controversies over funds spent on 'comfort capsules' for senior officers to travel in luxury to war zones, over the Byzantine procurement processes for large fleets of replacement aircraft,

over sponsorship for their display team, the Thunderbirds. Deprived of its Commander, the USAF is obliged to wait for the Senate to endorse a replacement, months with caretaking, not strategy, at the helm while the new Commander rises to the challenge of transforming the organisation.

In the straitened times that face our own military capability, these arguments are relevant. We may not choose to place heads on sharpened stakes in the media in the American manner, though with the increasing tendency of our Senior leaders to engage in fratricidal media operations, this may not be long in coming. We do, however, compete for limited resources, we do establish policies that gather momentum, or inertia, and become a legacy for our successors and all too often, a constraint on our front line. We do engage in narrow, tribal thinking to reinforce our own position and weaken our competitors. There is nothing new in this. It is natural that organisations act in their own interest. But it would be unwise to confuse that self-perpetuation for reasoned argument about the needs of the battlefield. Human lives depend on clarity and rational thought.

It is worth examining the reality of conflict, and the surge period in Iraq in particular, before taking a look at future challenges, both within and without the current paradigm for irregular warfare.

The Petraeus doctrine is expressed in US Army Field Manual 3-24, which looks to accentuate the 'soft power' aspects of military presence to win hearts and minds. It seeks to steer the pragmatic and reductionist tendency in US military thinking away from 'kill and capture' and the discredited metric of the body count, toward a more meaningful engagement with a population, empowering the host nation to act, through the medium of intelligent, well trained soldiers mentoring and supporting indigenous forces.

In 2007, in order to implement this approach, 30,000 US soldiers were extended or surged into operations in Iraq. Violent incidents fell significantly by the end of the year. The doctrine was, apparently, effective.

However, polling[2] in Iraq suggests the effect was not one of 'winning hearts and minds'. Some 63% of the population felt the surge had had either no effect or a negative effect. 79 % had no confidence in American troops and 42% believed attacks on US Forces to be justified, suggesting either the doctrine had not been implemented as intended, or the outcomes were not as predicted. The impact on the global stage is less easy to determine, but the perception of US occupation of an Islamic population continue unabated and Al Quaida has continued to recruit on the strength of the operation.

Nor, it seems, was there a significant reduction in 'kill and capture'. Early indications[3] suggest Iraqi deaths were 25 – 50% above the preceding year. Those accused of insurgency and held in US managed prisons also rose from 15,000 in 2006 to 25,000 in 2007[4]. Few, if any, of the surged troops were the highly trained counter-insurgency forces capable of integrating into the host nation and guiding its efforts. These were the same troops held over, deployed early or called up from the Guard units of the small towns of America. Dedicated, committed to the task and ready to take up arms in the

cause of Democracy, but no different from the many who had preceded them.

So why did hostile activity decline in 2007?
Detaining 25,000 potential insurgents would undoubtedly have an impact in the short term (though how it might affect the long term is less clear). The arming and 'legitimisation' of warlords in tribal sunni and shia areas, largely segregated as a result of years of kidnap, torture and forced migration, would reduce some of the freedom of manoeuvre for insurgents, particularly those recruited abroad. The third element, which surged alongside troops on the ground, was the deployment of airpower. Kinetic airstrikes were acknowledged by Congressional Research Service[5] as a major factor: 'one of the major shifts has been in the kinetic use of air power.' But airpower has been historically condemned in the COIN environment for lack of discrimination, for the counter-productive effects of collateral damage, for its lack of persistence and the inability to act in a timely manner against transient targets.

Historically
And therein lies the significant change, self-evident to anyone who has sat in an operations room in Afghanistan or Iraq, who has watched the change in balance between air and land over persistence and precision. A soldier cannot remain amongst a hostile populace for protracted periods, building an understanding of pattern of life, assessing movements of key individuals, understanding their habits and associations. Air can, and does[6]. The very presence of a military unit, heavily protected and moving to retain tactical surprise, changes that which is observed. Silent and invisible, air

A USAF F-16 releasing a Paveway III laser-guided bomb

does not. The collateral effect of the soldier, his presence, the munitions he deploys, is significant. The precision of air munitions has increased to the point that its accuracy, both in determining and destroying the right target, is far beyond that achievable by ground based systems, armour or indirect fire. From the inventory of complex sensors and non lethal munitions, through the low speed, intimate support afforded air manoeuvre forces by helicopters and UAVs with hellfire to the panoply of low yield, high precision bombs, there is an arsenal of precise, controlled effect sitting over the battlespace with the ability to respond to a spectrum of triggers. As one combatant told the New York Times[7]: 'We pray to Allah that we have American soldiers to kill…these bombs from the sky we cannot fight.' Air power inflicts on the insurgent the kind of psychological effect that he seeks, through improvised explosive devices and ambush, to have on our own people. Increasing troop numbers on the ground increases vulnerability to hostile action, offering ever greater footprint, support personnel and targets, increasing the psychological and media effects achievable by the insurgent. Fewer, better soldiers, with the right

training and resources and recourse to persistent and effective air, space and cyber capability make a significant difference. It is proven on the ground in Iraq and Afghanistan by SOF every day.

The competition between states, between nations and peoples, between cultures and identity blocks is a constant throughout human history. When one power dominates the globe with a strategic advantage that no conventional opponent can match, the opposition, those whose interests diverge, or who do not associate themselves with that power, naturally seek to exercise influence on global events through alternate strategies. Unconventional warfare is the current paradigm. Network enabled, media aware virtual organisations can wreak havoc on a militarily dominant, but technologically dependent and democratically open society, as a parasite may on a far more complex organism. The ability of the current Islamist threat to evolve and respond to changes in our behaviour is remarkable. Intelligent and highly educated minds are engaged in identifying and targeting vulnerabilities, modifying approaches as we, in turn, evolve to meet the challenge. Understanding and defeating this opponent lies initially in the cyber domain, with the necessary vigilance to prevent attack and prosecute arrests enabled by the associated air-space-cyber domains. But this does not make a conventional strategic advantage redundant. As soon as that advantage is lost, the competition will return to the historical norm; rivalry expressed through political, diplomatic and military conflict. The United States dominates the global stage, both militarily and culturally. The vitality of its economy, the capacity for innovation and intellectual inquiry is, for the meantime, unparalleled. Unparalleled, but not unchallenged. China and Russia have legitimate interests, as does an emergent Europe, India and Iran in ensuring their influence over their neighbours and the global economy. The role of the state is to ensure the security and interests of its Sovereign entity are met. The global system is not an amiable village populated by liberal idealists, it is a turbulent pool of sharks. As soon as a strategic advantage is lost, it is challenged. That is why we are not speaking latin. Dominance creates power balancing behaviours and the United States is creating a great many. China and Russia have the intellectual and technological resource to probe weaknesses in emergent domains. They continue to develop approaches to warfare which will, if the situation affords, become the basis for open competition. Thus the vision of the United States Air Force in acknowledging the need to lead in space and cyberspace and resource the conventional strategic advantage is wise and deserves applause. However, the challenge is to meet the requirements of the current operation whilst resourcing preparations for the next, with finite resources and strengthening opposition, internal and external.

That is a challenge which necessarily translates to our own sphere, our own interest, in the United Kingdom. We cannot afford to underestimate the contribution of air in the current conflict, or our dependency on it, and its associated realms of space and cyberspace, in the next. The speech by Secretary Gates, frequently used in Washington to query procurement programmes for Air and Maritime environments, stands further examination:

'There is a good deal of debate and discussion – within the military, the Congress, and elsewhere – about whether we are putting too much emphasis on current demands – in particular, Iraq. And whether this emphasis is creating too much risk in other areas, such as: preparing for potential future conflicts; being able to handle a contingency elsewhere in the world; and over-stressing the ground forces, in particular the Army. Much of what we are talking about is a matter of balancing risk: today's demands versus tomorrow's contingencies; irregular and asymmetric threats versus conventional threats. As the world's remaining superpower, we have to be able to dissuade, deter, and, if necessary, respond to challenges across the spectrum.'

The test of any putative capability should indeed be relevance to current operations and what we can predict of future conflicts. It must, however, be acknowledged that our predictions of future conflicts and strategic events have been consistently inaccurate. Thus, our best safeguard is flexible capability, systems that can adapt, with geographical and operational reach, yet capable of operating with intimacy. Our capability must not be contingent on the interests of our defence manufacturers, or the internecine struggles that distort the historical record and pervert departmental policy. We must acknowledge, with clarity and impartiality, what it is that delivers the necessary effect now and has the adaptability and growth potential to meet the uncertain demands of the future. Global reach and ubiquity have long been essential elements of air, but as technology accelerates, airpower is entering an era of unparalleled adaptability, persistence and precision. It is at the very heart of our success.

Su-25 Frogfoot ground attack aircraft

Russian tanks and cyber war

As Washington basked in its customary summer torpor and the world's attention was turned to the Olympic gathering in Peking, it might have seemed, if only for a moment, that the old truths were behind us. We live in a new world, with new challenges. China, India and Brazil rapidly ascend the developmental ladder, soaking up global resources; a gradual, relentless deterioration of the environment pressures populations and borders, small groups of radical muslims crouch in caves and dream of caliphates, soldiers must become armed social workers and airmen, eyes in the sky.

Then with an alarming jolt, the old ways intruded into the reverie.

Columns of Russian armour, self propelled guns and mounted infantry, pour through narrow defiles in the Caucuses. Ground attack aircraft, spewing out infra red decoy flares, arch over unseen huddles of vulnerable people. The familiar craters of heavy

munitions fill the screen. Refugees amass, diplomacy falters, the media rails against brutality and injustice.

It all seems so anachronistic. The same Russian soldier had straddled his gun-turret entering Kabul, and Prague, and, seemingly, Berlin before that. So where were the massed ranks of soldier-social workers and cross-governmental strategy groups and streamlining tiger-teams? Is there room for discourse when armour grinds its way through fields of fire? When the guns roar, surely only overwhelming force can win the day?

Of course not. Military force can resolve nothing. Those armoured columns can break a great many things, destroy lives, infrastructure and people, but they can resolve nothing. They are an eruption of the many frustrations that arise from ill-defined borders, conflicting identities and sparse resources. It takes diplomacy, negotiation, recognition of cause and effect, rational analysis and open dialogue to resolve the complex issues that fuel aggression. Morality and just cause are rarely self-evident. Shades of grey abound in the world where solutions are crafted.

So what is there to learn from this event?

If we were to follow the example of Hezbollah, and there are worse coaches in this turbulent world, we would respond by rebuilding infrastructure, opening financial opportunities, improving quality of life, providing medical and social care to victims of this dispute. We would attract the wavering masses, not assume the right to punitive action. Lest we forget: The Soviet Union was brought down by Coca-cola and Marlborough, not Pershing and Minuteman. Lebanon was won by provision of social services and medical care, not by Israeli bombardment.

So, what may be drawn from this unfortunate venture in the Caucuses? Behind the screen of grinding armour, a new line of development, trialled and debated elsewhere, was brought into focus. Flawed, as yet in its infancy, but coordinated and brought to bear alongside the traditional martial activities.

As the border fell behind the advancing troops, the computer systems of Georgia were assaulted by an overwhelming wave of hostile activity, a wave oblivious to physical borders and nationalities. Web sites and communication systems used by the President, Parliament, Ministries of Defence and Foreign Affairs and the media in Georgia were disabled. It was an imperfect assault, as it did not disarm the air defence system, which continued to harass the ground attack aircraft pummelling the infrastructure and deployed forces of Georgia. Nor was it able to seize the archaic infrastructure of the target country, which was, in all probability, protected by a veil of obsolescent technology. But it was, for the first time, a coordinated arm of a major attack. Previous cyber operations have been conducted by the Russians in concert with diplomatic pressure. When the Government of Estonia decided to move a memorial to the soldiers of the Great Patriotic War, built by occupying Russian Forces in their capital city, the country suffered 24 days of disruption which closed the banking system and forced major changes in approaches to maintaining infrastructure and social cohesion in the absence of computer networks. The leading suspect behind the attacks, in Estonia and Georgia, is

an organisation known as the Russian Business Network, though it would be exceedingly difficult to prove any link to that organisation or to the Russian government. In this domain the aggressor can enjoy the anonymity of the internet, as a virtual non-state actor, while furthering national interest.

Don Jackson, director of threat intelligence for SecureWorks, an Atlanta computer-security company, analyzed the Internet traffic during the attacks and found evidence of outsiders breaking into and erasing data from Georgian government servers. He traced the attacks from what he called a 'cyberinfantry' to servers used both by the Russian Business Network and the Russian government...Russian embassy spokesman Yevgeniy Khorishko denied any Russian government involvement. 'Russia is not responsible for that,' he said. 'How do the Georgians know that these are Russians? We have nothing to do with these attacks.' He said Monday Georgia has blocked access to all Russian Web sites – ones that end in the suffix ru….It is difficult to determine who is behind a cyberattack. Georgian government officials tapped into an international network of cybersleuths in countries such as Germany, Estonia and the U.S. They moved government information to servers in Germany and established backup systems in Estonia, which has become an international expert in cyber-response since its government Web sites came under attack last year, by what is believed to have been a Russian adversary.[8]

The anonymity and ease of access, low cost and low risk for the technologically literate, raises a new dilemma for state control of the instruments of power. An individual, pressure group or niche interest could conceivably initiate, escalate or sustain diplomatic pressure, and potentially armed conflict, beyond the control of the sovereign state, which begs the question: Which is more worrying: Russia choosing to use a deniable capability to conduct operations against bordering states, or Russia having no control over extremist groups who launch attacks to meet their own interpretation of national interest? What value has diplomacy in resolving conflict when the State has no control over combatants? How do you seek to deter or coerce an anonymous assailant, who may be a nation state, a criminal or an adolescent prankster?

'Cyberattacks are now a staple of conflict -- whether authorized or unauthorized," said Paul Kurtz, a former aide to the U.S. government's National Security Council. Such attacks are particularly unpredictable because they can be launched by groups outside of the government, which can escalate crises even as governments are seeking to diffuse them, he said.'[9]

Russia is not alone in developing this kind of capability[10]. They are simply the first to expose their own use of the cyber domain in armed conflict. Others may have exploited the cyber domain. It has been alleged, for example, that in 2007 Israel closed down the Syrian Air Defence system in order to attack selected targets with impunity[11]. If such an attack did take place, then it achieved its objective, it was discreet, effective and deniable. The Syrians can only wonder whether their own system or operators underperformed, or whether Israeli tactics were beyond their detection capabilities. If this was the case, if this attack took place under the shroud of cyber warfare, then it would expose

a peculiar vulnerability of air forces. Technologically highly developed, networked and utterly dependent on complex computer systems, they are absolutely vulnerable to this kind of attack. None of this is lost on potential opponents, who seek asymmetric approaches to counter the overwhelming superiority of American and allied forces. China, where cyber warfare is an acknowledged element of Defence doctrine, stands accused of launching thousands of probing forays a month into U.S. computer systems, military and civil, for commercial and military advantage. Chinese intrusion has been noted in the IT systems in US Secretary of State for Defense's office, the Pentagon, Chancellor Merkel of Germany's office and, it is suspected, the top 300 British Corporations. A particularly ingenious ploy allegedly involved incorporating a 'Trojan horse' into an electronic picture frame, sold widely through the USA, which responded to computer connection by introducing a programme that disabled antivirus programmes and passed any passwords in the system to the manufacturer in China. Naturally, the Chinese Government denies any involvement.

Whatever the source of these attacks, whoever is probing and developing capability, the necessary response is the same:

'Cyberspace has become integral to the joint fight…We expect all of the services, to include the Air Force, to provide personnel who are trained and who know how to operate systems in cyberspace…they must know how to be able to defend cyberspace, how to be able to support-intelligence operations in cyberspace, and if we're directed, to be able to do offensive operations in cyberspace.'[12]

It is not a uniquely 'Air Force' problem. The collapse of the financial system, power generation and distribution and communications are a challenge to us all. The loss of industrial, commercial and financial information has repercussions throughout society. But, within the sphere of military operations, the increasing dependency on complex communications and data systems is most evident in Air Power, and thus the burden falls to Airmen to develop responses and seek to insulate our core capability from the damage which can be so readily inflicted at so little cost to the enemy.

'. . . the formation of Air Force Cyber Command was a stroke of genius by the Air Force secretary and chief of staff to focus Air Force resources and efforts on this problem, quite frankly, because we're so dependent on it…Our value is in the cross-domain integration of air, space and cyberspace, to create combined effects on the battlefield for the production of sovereign options . . . that there may be misperceptions that the Air Force's purpose is to 'protect the nation, or protect the Department of Defense'. But all of the services have organizations that do, in some ways, what we do. The creation of the new command is about the Air Force focusing resources, energy, direction, money and programs, for the protection of command and control capabilities so that Air Force elements are available for the joint fight.'[13]

It is not too late to develop the capability to counter this challenge in the United Kingdom: but we are entering the race late, and we may not be recruiting the correct demographic to display the creativity and technical innovation required to match the resources already invested by our potential opponents. We may, like the cavalryman who could not envision a role for the aircraft over

the battlefield, or the Naval officer who denied aircraft could influence maritime warfare, be incapable of comprehending the ultimate scale of the challenge posed by this peculiar dependency, and the impact of assault. But we can begin generating the momentum required to ensure our next generation of airmen are masters of the domain. Armour may still cross borders, air forces may choose to destroy infrastructure and deployed forces, but they will do so with impunity, in an entirely different context, if our own mechanisms of state are disabled, along with the ability to command and control our forces, to bring force to bear in our own defence. We ought, at least, to thank our Russian neighbours for this timely reminder of the realities of the shifting nature of power, and our own developing weaknesses.

Afternote

There may be solace at least for the advocate of manned aircraft. Once you take the man out of the cockpit, you may create considerably more complex, and vulnerable, dependencies than you can defend.

The author is deeply indebted to Charles J Dunlap Jr, for his article *Making Revolutionary Change: Airpower in COIN Today* available at http://www.carlisle.army.mil/usawc/Parameters/08summer/dunlap.pdf

The speeches of Defense Secretary Robert M Gates can be found at http://www.defenselink.mil/speeches/secdef.aspx

Notes

1 For an engaging perspective on the US Army in the post-Vietnam era, see Richard A Clarke ' Your Government Failed You'. Ecco New York 2008.

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http://www.usatoday.com/news/world/iraq/2007-09-26-insurgents_N.htm.

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Historic Book Review

Victory through Air Power
By Major Alexander P. De Seversky

Reviewed by Air Cdre Neville Parton

Published by Simon and Schuster, New York (1942)

'The task of each generation is to interpret accumulated experience and to adapt it to new conditions. The past and the present are useless to us unless they enable us to see boldly into the future'[1]

In the pantheon of air power books, there are few that have ever achieved best-seller status, and even fewer that have been turned into a film. In fact only one fits into this category, and that is *Victory through Air Power*, published in 1942 by an émigré Russian aviator who had taken up residence in the United States of America. In common with a number of the other authors in this series, de Seversky had a colourful background which had shaped his understanding of air power, and this needs to be understood in order to place his contribution to the theory of air power in perspective. Indeed, de Seversky's range of achievements in the aeronautical field were extremely broad, covering operations at one end, through experimentation and design (including a number of U.S. patents) to being a highly effective advocate for American strategic air power – all the more impressive when his perhaps unlikely background is borne in mind.[2]

Alexander Nikolaievich Prokofiev De Seversky was born in 1894 in Tiflis, Georgia, to a Russian family of noble parentage. Educated at a military school from the age of ten, he then joined the Imperial Russian Navy via the Naval Academy, where he was commissioned as a lieutenant in 1914, and saw service in a destroyer flotilla in the Baltic for the first year of the First World War. In 1915 he became an early convert to the aeronautical field, qualifying as a naval pilot, as well as completing a postgraduate course in aeronautics. During the remainder of the First World War he served as a naval aviator, losing his right leg in combat on a bombing, but recovering well enough to continue to fly for some considerable period thereafter as a fighter pilot with an artificial limb. At the time of the Russian revolution in 1917, he was in the United States as a member of the Russian Naval Aviation Mission, and made the decision to stay in America rather than returning to his homeland – offering his services to the U.S. Government as an aeronautical engineer and test pilot. After the War, he worked closely with General 'Billy' Mitchell, particularly during the demonstrations of the effectiveness of aircraft against capital ships, and it was to Billy Mitchell that *Victory through Air Power* was dedicated. It was during this association that De Seversky began to develop his own ideas about the future potential for air power, in which, unsurprisingly, he was heavily influenced by Mitchell – as was self-evident in his later views on navies and naval aviation.

In 1923 De Seversky married Evelyn Oliphant, an American socialite – and fellow pilot – who came from New Orleans. They settled in New York city, and in 1927 De Seversky became a naturalized citizen of the United States

– by the following year he had also been commissioned as a major in the U.S. Army Air Corps Specialist Reserve. However by 1931 his efforts had turned more to the field of business, and in that year he founded the Seversky Aircraft Corporation, which produced a range of aircraft over the next seven years. Indeed, he established a number of world speed records in Seversky aircraft during this period. Unfortunately his skills lay more in showmanship than project management, and despite securing a number of lucrative government contracts, the organisation seemed unable to produce a profit under his management. Eventually in 1939, the Board of Directors voted him out and changed the name of the business to the Republic Aviation Company, which subsequently became best known for the P-47 Thunderbolt.[3] The nature of the relationship between De Seversky and Republic is not clear, but certainly their aircraft receive many favourable 'plugs' in *Victory through Air Power*.

He was certainly well-informed with regard to developments in air power, having conducted a European tour in early 1939, during the course of which he managed to visit the air forces and aviation industries of Britain, France, Italy and Germany. In Britain he spent a month at Martlesham Heath, during which time the Seversky aircraft that he had brought with him were assessed. De Seversky was allowed to fly both the Hurricane and Spitfire, being favourably impressed by both aircraft – and the state of the aircraft industry, which was already being established for operations on a wartime footing. In Germany he was impressed by the technical ability of the German companies, as well as their facilities and production machinery, although he was critical of the defensive armament on bombers. Italy he was generally unimpressed by, and France received a vitriolic assessment, covering the poor performance of their aircraft, inadequate (and dirty) production facilities, and corrupt and ignorant administration![4] In 1940 he was presented with the International League of Aviator's Harmon Trophy by President Roosevelt for his outstanding achievements in the field of American aviation, by which time he was also a well-read commentator on all matters aeronautical.[5] He was also, if not an accomplished engineer, certainly an imaginative one. He took out his first U.S. patent in 1921 for a method of air-to-air refuelling, and forty-odd years later, was still taking out patents – with his last being in 1964, for a lifting device known as the ionocraft.[6] But it is for his book that he is perhaps best remembered today, as well as the subsequent collaboration with the Disney Studios which resulted in a motion picture promoting the cause of strategic air power.[7]

Given his predilection for the memorable and dramatic, it should come as no surprise that this is very definitely not a dry and considered piece. Indeed, its beginning is remarkably redolent of Douhet's writings some 20 years before. Consider the following extract from the opening pages:

From every point of the compass – across the two oceans and across the two Poles – giant bombers, each protected by its convoy of deadly fighter planes, converge upon the United States of America. There are thousands of these dreadnaughts of the sky. Each of them carries at least fifty tons of streamlined explosives and a hailstorm of light incendiary bombs … With the precision

of perfect planning, the invading aerial giants strike at the nerve centers and jugular veins of a great nations … The havoc they wreak is beyond description. New York, Detroit, Chicago and San Francisco are reduced to rubble heaps in the first twenty-four hours.[8]

However it would be wrong to write off this publication as simply the ramblings of an air power fanatic. Even though it does suffer some major deficiencies, which will be returned to later, much of the analysis of aviation's role in the Second World War – or at least the first two years of it which had passed when this was written – is extremely lucid and informative. Nevertheless, it cannot be denied that the publication is first and foremost a polemic exercise, aimed at convincing the American people that they should invest in their air power – and do so at the expense of land and sea forces.

The book consists of twelve chapters. The first, from which the extract above was taken, paints a Douhetian picture of the fate that awaits America if it does not take the threat from the air seriously. The next three chapters examine particular aspects of the Second World War, as observed in 1941, concentrating on a comparison between operations in Norway and Dunkirk, the Battle of Britain, and operations in the Mediterranean and against the Bismarck. The rest of the book consists of an analysis of the changes that air power had wrought at the strategic level in warfare, an examination of the mistakes made in Europe over aviation development and, after a sideswipe at navies, a considerable critique regarding the state of air power development within the U.S. The book finishes with a number of recommendations regarding the way that air power should develop within America, based on a combination of geostrategic factors, fundamental principles of air power, and the comparative advantage provided by industrial capacity and technological superiority.

In the latter part De Seversky identifies eleven air power lessons for America, based in particular on his own analysis of the role of air power in the World War to date. These effectively form the heart of his argument, and it is therefore worth considering these as they make explicit the thinking that underpinned his eventual conclusions.

1. *No land or sea operations are possible without first assuming control of the air above*. Although this had arguably been identified as a principle of air power in a joint context from before the First World War[9], the examples of the German successes in mainland Europe, and failure in operations against England clearly gave considerable strength to this proposition. Of course it is couched in far more trenchant terms: 'Those who do not understand this … cannot be trusted with authority in modern war …'[10]

2. *Navies have lost their function of strategic offensive*. Here the case is made that whilst in the past a nation's capital ships could take the war to an enemy's shores, this is no longer possible if the enemy is possessed of an air force with any capability. De Seversky's prejudices are at their most blatant, as no mention is made of the role that submarines could play in forcing a blockade against an enemy – which by this time was self-evidently effective in the Battle of the Atlantic – or of the part that carrier-

borne aviation could fulfil in dealing with an enemy air force. In fact he is damning in his views on naval power in general, and pours scorn on those who would suggest that investing in a navy is the way to guarantee both security and freedom of action.

The French poured billions of francs into the concrete of the Maginot Line, their superfortress. We are pouring billions of dollars into the ring of steel, our supernavy. The only difference is in the substance: the French favoured concrete, we favour metal. The ideas and the psychology behind both are the same, and unless we come to our senses in time, the same results may follow.[11]

3. *The blockade of an enemy nation has become a function of air power*. Following on from the previous premise, De Seversky argues that air forces are now far more able to blockade an enemy, pointing to the fact that according to official Nazi statistics the Luftwaffe was responsible for around 25% of the first 13 million tons of British shipping sunk (the other 75% being mostly due to the U-boat fleet). However no mention is made regarding the difficulty in such an approach against an enemy that is not dependent upon sea lines of communication, although the ideal counter-measure is identified – which ties in which the next point, as the solution put forward is to have defensive air power to protect shipping.

4. *Only air power can defeat air power*. Although this does not quite go as far as the 'constant offensive' of RFC and early-RAF doctrine, it does convincingly argue that ground-based defences are a palliative, not a cure, and the elimination or stalemating of an air attack can only be achieved by an air force. The vulnerability of ships in this regard is emphasised, with reference to the destruction of the *Prince of Wales* and *Repulse*.

5. *Land-based aviation is always superior to ship-borne aviation*. Although there is an element of truth in this premise, related to the modifications necessary to allow carrier operations and the consequent impact on aircraft performance, it again clearly demonstrates the prejudices of the author. For instance the fact that dispersion of assets is impossible on a carrier is mentioned, whilst the point that the airfield in question can be moved by hundreds of miles in a day does not appear to be recognised.

6. *The striking radius of air power must be equal to the maximum dimension of the theatre of operations*. This is an argument solely constructed to support a need for the establishment of fleets of intercontintental bombers, able to strike anywhere in the world from bases within the United States:

The entire logic of aerial warfare makes it certain that ultimately war in the skies will be conducted from the home grounds, with everything in between turned into a no-man's land. As soon as aviation exploits its full technical potentialities of fighting range, intermediary points will be abandoned, one after the other, like so many obsolete outer fortifications.

This was certainly a powerful argument in the line of development of what would become Strategic Air Command, and is still evident in American air power policy to this day (think of the B2 or Project FALCON[12]). However, the

cost of those 'full technical potentialities' is still a factor in the practicality of such an approach, and as with much else in aviation, trade-offs are inevitable.

7. *In aerial warfare the factor of quality is relatively more decisive than the factor of quantity*. This conclusion was specifically related to the Battle of Britain by De Seversky, as he attributed the defeat of the Luftwaffe directly to the speed and armament advantage enjoyed by the Spitfire and Hurricane, with these factors negating the overall numerical superiority of the German forces – although the ratio was perhaps not quite as one-sided as is suggested here.[13] Other elements are ignored though, such as failures in strategy, intelligence and targeting.

8. *Aircraft types must be specialized to fit not only the general strategy but the tactical problems of a specific campaign*. This is a rather odd principle, and appears to relate more to De Seversky's experience in aircraft design and manufacture. The approach calls for far more 'foresight' amongst military leaders, in order to be able to foresee the need for specialist types of aircraft for specific campaigns. Given that the development time for larger aircraft in particular was even then measured in years rather than months, this appears to be advice along the 'run faster, fly better, land smoother' line – and hence not particularly helpful.

9. *Destruction of enemy morale from the air can be accomplished only by precision bombing*. Although this aspect ties in with the unofficial doctrine regarding the need for precision bombing espoused by the US Army Air Corps at the beginning of the Second World War, here the argument is made that indiscriminate bombing against civilian targets has been demonstrated to fail, and is both costly and wasteful in terms of resources. Instead, it is suggested that precise bombing against the essentials of life – food, shelter, light, water and sanitation – will be far more effective. It also reiterates a point made earlier, in that modern industrialised societies were seen as much more vulnerable than primitive ones to air power.[14]

10. *The principle of unity of command, long recognized on land and on sea, applies with no less force to the air*. Interestingly, the approach taken with regard to unity of command is not related to modern arguments relating to prioritisation of scarce resources and the ability to focus on the most appropriate point, but instead upon the difficulty of developing an efficient air service if it is split into different elements, each subservient to another fighting service. The example given again relates to recent British experience, 'Imagine the Battle of Britain under similar circumstances, with the Royal Air Force split into segments, one under the Admiralty and the other under the Army!'[15]

11. *Air power must have its own transport*. In this last postulate, a case is made for the increasing use of aerial transport to support aerial warfare. Particular emphasis is placed upon the ability of air to reinforce far-flung locations, but the point is well made than unless it can arrive with all necessary supplies then it will not be able to influence any combat in the way that the previous ten lessons have indicated.

Based on these lessons, De Seversky's conclusions were simple – and the first was repeated at regular intervals throughout the publications, and simply

stated that '… at present we have no air power at all'.[16] This was based upon both the way in which aviation only existed in the form of auxiliary elements to the naval and land forces, and also with regard to the way that the American government was extremely defensive regarding the quality of the aircraft that its industry produced. At the same time America's geostrategic situation and scientific, technological and economic strengths made air power the natural weapon of choice for the future. However the corollary to these conclusions was that a truly independent air force would be required in order to overturn the 'old guard', and to enable the production of an air force that would realise the predicted potential:

Air power is the American weapon. It will not fail us, if only we unchain it and provide immediately the minimal conditions for its unhindered development.[17]

Viewed with the perspective of 60-years of hindsight, *Victory through Air Power* is a bit of a curate's egg; some parts highly prescient, based on extremely cogent analysis, whilst elsewhere descending into diatribe against the government and military establishment of the day. Furthermore, thanks to its extensive print run it is still possible to obtain a copy today at a reasonable price. But what impact did it have? It was certainly widely sold –and read – being reprinted at least five times within the first year of publication, and reaching the Number One position on the newly-introduced New York Times best-seller list for non-fiction on 16 August 1942. In fact, it was estimated that five million Americans had read the book, and over twenty million knew of the author and his message.[18] Appearing less than six months after the attack on Pearl Harbour in 1941, and the entry of the United States into the Second World War, the book was extremely popular, with its strong endorsement of the formation of an independent air force and the development of long-range bombers, as well as a commitment to the strategic use of air power, which implicitly involved diversion of resources away from current war operations. Nonetheless, its bitter criticisms of the state of air power in the U.S. and denigration of land and naval forces won it few friends within the miltary establishment. However it was probably the accompanying film, made by Disney as part of their commitment to the war effort, which had a greater impact on the American public. The film had all critical comments removed from the script, which resulted in the USAAF adopting it as a means of educating recruits about air power. It was also considered to be a great educational piece by such individuals as Air Marshal Jack Slessor and even Winston Churchill.[19] In America it is credited with having built a sense of air-mindedness, and an understanding of the particular relevance of strategic air power to America, which came together in the creation of the United States Air Force in 1948.

As an end note, it is worth considering that De Seversky focuses in on the fact that the American entry into the war was '… signalized by a humiliating defeat through enemy air power'[20] and of course Pearl Harbor was a turning point in American history. It could be argued that the next single event which would have such a similar, singular impact,

on the subsequent course of American conduct was also a form of air power – the attacks on the Twin Towers in New York and the Pentagon in Washington. De Seversky's identification of the air as being the only real military threat mechanism to the homeland United States may still hold true in the 21st century…

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Notes

1 Major Alexander P. De Seversky, *Victory Through Air Power* (New York: Simon and Schuster, 1942), 122.

2 For greater detail on De Seversky's life, and an in-depth-analysis of his contribution to the making of American air power, see Phillip Meilinger's chapter entitled *Alexander P. de Seversky and American Airpower* in Phillip S Meilinger, ed., *The Paths of Heaven : The Evolution of Airpower Theory*, First ed. (Maxwell, Alabama: Air University Press, 1999).

3 The Republic Aviation Company was eventually taken over by Fairchild in 1965.

4 It is worth noting in this regard that some correlation can be drawn between the way in which De Seversky's aircraft were assessed by those countries that evaluated them (France, Italy and Great Britain), and the way in which he wrote regarding their industry! See Seversky, *Victory Through Air Power*, 184-212.

5 Although this award was considered controversial within a few years: the Secretary of the Air Force stated in 1947 that he did not believe that De Seversky deserved the award (RB to Matthew J. Connelly, June 14, 1947; White House Central Files: Official File 1049 357R, Truman Papers, Truman Library).

6 Brief explanation of how it works!

7 Ref for film and DVD.

8 Seversky, *Victory Through Air Power*, 7.

9 Following the 1912 Manoeuvres in which he defeated General Sir Douglas Haig, having made considerable use of the reconnaissance available to him from the aircraft of the RFC, General Grierson commented that: "I think there is no doubt that, before land fighting takes place, we shall have to fight and destroy the enemy's aircraft. It seems to me impossible for troops to fight while the hostile aircraft are able to keep up their observation. That is to say, warfare will be impossible unless we have mastery of the air." Mead 46

10 Seversky, *Victory Through Air Power*, 123.

11 Ibid., 177.

12 FALCON (Force Application Launched from the Continental United States) is a Defense Advanced Research Project Agency (DARPA) run project to be able to place a 12 000 lb warhead anywhere on the Earth's surface within 2 hours. See http://www.darpa.mil/ucar/text/programs/falcon.htm for a project resumé.

13 De Seversky estimated 3000 German fighters against 1200 British; the actual figures were approximately 1200 for the Luftwaffe (Me 109 and Me 110) and around 650 for the RAF. Seversky, *Victory Through Air Power*, 50. and Stephen Bungay, *The Most Dangerous Enemy*, First ed. (London: Auram Press Ltd, 2000), 418-22.

14 Seversky, *Victory Through Air Power*, 147.

15 Ibid., 149.

16 Ibid., 279 as an example.

17 Ibid., 352.

18 Meilinger, ed., *The Paths of Heaven : The Evolution of Airpower Theory*, 256.

19 Ibid., 258.

20 Seversky, *Victory Through Air Power*, 4.

Book Review

The Wages of Destruction: The Making and Breaking of the Nazi Economy, by Adam Tooze

Reviewed by Peter Gray, Senior Research Fellow in Air Power Studies, University of Birmingham

Published by Allen Lane (London) 2006; and Penguin Books (London) 2007

This is not an air power book; nor is it a 'conventional' history of the Second World War. It is, nevertheless, an extremely important volume for anyone involved in thinking about strategic level affairs. Anyone working on strategic level history; doctrine formulation; or planning the manipulation of the strategic levers of power should be aware of the all-encompassing dependence on economic planning and execution; this book illustrates the challenges in the context of the rise and fall of the Nazi economy from the aftermath of the shambles of the First World War.

It is very easy for contemporary proponents to recite the importance of coalition, or government, policy being subject to the exercise of the complete range of strategic levers. Conventionally, these include diplomatic, military, security (in its various guises), financial, economic and so forth. If the list were to be expanded to embrace subjects included in strategic planning tools it could also cover legal, environmental, sociological issues. Arguably religious considerations along with ideology should also feature. It is highly unlikely that any single individual employed in the strategic planning section – assuming such a beast exists – of the respective government departments will have the energy, education, experience, intellect and time to be able to master the complexities of all of these in the context of planning. The planning may be long range, contemporaneous or conjectural but the greater the crisis, the less likely that time will be afforded, especially at the more senior levels. Nor can it be taken as a given that the raw information will available from either open or covert sources. And even if available, the chances of consensus over the interpretation and analysis will be slight. Then deciding on an appropriate – all encompassing – comprehensive approach is even more problematic. The lack of suitable mechanism will, at best, hinder progress. The difficulties will inevitably be exacerbated if relations between departments are riddled with intrigue and petty politics. It will be even worse still if the politics – as in the case of the Third Reich – are far from trivial.

Tooze illustrates the problems faced by Germany in the aftermath of the First World War, through the advent of Hitler, into conflict and thence defeat at the hands of two economic systems that, whilst very different, were able to eradicate the much-vaunted Nazi war machine. Hitler had long anticipated the necessity for both struggles and strove to avoid them happening contemporaneously. Hitler, along with his colleagues in the Party and in industry, were well aware of the American industrial and economic potential, they consistently underestimated just what had been

achieved by the Soviets. Some of this was down to racist and ideological baggage; part owing to the lack of hard information as to what had been achieved in the vast factories east of the Urals. Interestingly, the Soviet dictatorship proved to the more adept (or ruthless) at building a homogenous war machine; Germany was constantly divided into factions each of which fought, variously, for profits, survival, influence and raw materials.

The avid reader of Second World War literature will be well acquainted with much of the military history and the accompanying diplomatic moves. But the economics of the situation are less well studied. And this was probably true of the planners at the time. Tooze explodes a number of myths in his treatment of the German economy. One of these is the widely held view that the war machine was coasting in the first two years of the War. Tooze highlights just how stretched Germany was in terms of foreign exchange necessary for vital raw materials (ranging from vitals metals and quality coal through to grain and basic foodstuffs); manpower; industrial capacity; transport capacity; and most of all energy. Tooze is ruthless in demolishing Speer's so-called 'armaments miracle' highlighting the foundations set in place by his predecessors and the failure to deliver – even in the face of the most draconian measures. The vicious exploitation of slave labour to the point of 'death through work' is illustrative of the pressure on all facets of the war economy.

These shortages increased markedly as the War progressed. Tooze highlights how an economy strained to breaking point was further damaged by the efforts of Bomber Command and the United States Army Air Force. He is dismissive of the various post war bombing surveys commenting that they could hardly have been more slanted to produce negative conclusions. Tooze does not situate his assessments of the damage done to the war economy in the context of the targeting debates that had been waged so vociferously by different camps in the UK and US, but he very clearly concludes that the destruction of the energy reserves and the transportation system had brought industry to its knees. An interesting aside in the debate is his revelation that the damage done to the Ruhr was so extensive that Speer had to re-organise the labour force along 'para-military lines' with barracks style housing and the issue of uniforms. This sheds a new light on the definition of 'combatant' in an era of total war!

All of this begs the question as to how aware the Allied wartime planners were of the state of the German economy. The extent to which the subsequent debate was muddied by rhetoric and dogmatic adherence to unproven doctrine is unedifying. But the blame cannot be allowed totally to rest at the door of the 'bomber-barons'. There is a wider issue as to how well-suited the rest of the Whitehall and Washington planning teams were to coping with a comprehensive approach to total war. In turn, the political leaders have some responsibility in ensuring that their wider organisations were 'fit for purpose'. This in turn raises the question of how 'fit for purpose' the current system is in providing a mechanism for today's contemporary planners, doctrine writers and manipulators of the strategic levers of power.

Letters

An invitation to help shape UK doctrine

'They're not fighting like we thought they would,' one IDF soldier said. 'They're fighting harder. They're good on their own ground.'[1]

In conflict the side that learns and adapts fastest makes its own luck. As a result of intensive operations over the past several years, this generation of British Servicemen and women, alongside our civilian colleagues who have deployed with us, have acquired a depth of hard-won experience, unparalleled since the Second World War. As Director General at DCDC the question I have been asking is whether we have the optimum system that allows us to draw upon that experience, evaluate it, codify the most profound insights and so use these campaign lessons to educate and train the commanders and staff of tomorrow? The answer is 'no': you may be able to help us do better.

How? The clue is in the name: the Development, Concepts and Doctrine Centre is responsible for the timely production of a body of work, based upon the enduring lessons of the past but informed by relevant recent experience. Doctrine offers a guide rail; it helps us think about our craft. Anyone who has ever received professional military education or training – most of the readers of this journal – will have been exposed to doctrine, whether they knew it or not. Few read it for fun, but it is a key element in any successful, serious military organisation. And where doctrine goes wrong – as the Israelis found to their cost during 2006 in Lebanon – the consequences can be profound.

A young soldier involved in the battle later lamented, *'The commanders told us that the infantry had already cleared the area, and then the tanks started getting hit, tank after tank. Why did they send us into this hell? Why did they send us into the missile trap? We already thought we were going to go home smiling and with the flags flying - instead, we go to our fellows' funerals.'*[2]

DCDC produces and continually revises UK doctrine for the joint strategic and operational levels. In other words, the business of deciding how to apply National power through the design and conduct of campaigns. Below that level, in the vital area of tactics, techniques and procedures, we work closely with the Service Warfare Centres and the Permanent Joint Headquarters who have the lead. If you can make a contribution that you think could help us improve our doctrine and thus what is taught to the commanders and staff officers of the future, then get in touch.

I am not expecting (but would be delighted to receive) award-winning Service papers. It could simply be you want to share an insight on a relatively narrow area, perhaps a planning approach that worked well in a joint or multinational Headquarters. Do not assume that 'they' never listen: we at DCDC will. I do not promise to put every nugget straight into our next Joint Doctrine Publication, nor will I become your pen-friend. I will, however, guarantee that your views will be read and considered carefully.

Notes

1 *The Long War Series Occasional Paper 26,* Chapter 4, p 44, US Army Combined Arms Center, Combat Studies Institute Press, Fort Levenworth, Kansas.

2. *Joint Center for Operations Analysis Journal on Second Lebanon War*, p 32, Volume X, Issue 1, December 2007.

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Soldiers are from Mars

Following an enthusiastic response to the Air Power Review article 'Soldiers are from Mars . . .', I wonder if the editor would be good enough to support a public response to some common themes of high interest? First, I articulated the fourth air power role as Coercion and aligned it to precision attack. However, subsequent staffing of the associated doctrine (which was at the time in development) led to a view that the role could more clearly be expressed as Attack, with a link to coercion. That step was taken and Joint Doctrine Note 2/08 Integrated Air-Land Operations in Contemporary Warfare (JDN 2/08) was published in August 2008 casting the four fundamental air power roles as Control of the Air, Mobility and Lift, Intelligence and Situational Awareness, and Attack. Some adjustments were also made to the theory of coercion. The doctrine can be accessed from DCDC's web site now and hard copies are being distributed.

Second, there is a useful debate unfolding about the potential demise of the Core Air and Space Power Roles, particularly Air Operations for Strategic Effect (AOSE). The proposed doctrine never foresaw any removal of that capability, only a change of its expression. JDN 2/08 attempts to bring air roles and capability back to its most fundamental level, because principles, tenets or fundamentals tend to stick and we currently have air doctrine and concepts using different expressions. JDN 2/08 makes very clear that Attack can be applied at any level of warfare. Therefore, what is currently cast in the Future Air and Space Operational Concept as AOSE is perfectly feasible. However, using a discrete label causes confusion in the other Services, because AOSE does not have universal application. Its title implies that there will always be something in the deep battle space to attack. But how, for example, could the role possibly apply in an insurgency? If the centre of gravity is the consent or tolerance of the host nation population, then which air operations create strategic effect? The answer might not be AOSE (which most people associate with long range bombers), but Intelligence and Situational Awareness and Mobility and Lift. Imagine a porous regional border in a big country, where interdiction of insurgents is triggered by Intelligence, but executed using Mobility and Lift to position a ground force. Strategic effect could thus be achieved by air power without a fast jet getting airborne or a bomb being dropped. Similarly, what is currently cast as close air support (a tactical level function of Attack) can create effects, for better or worse, at the strategic level. It is the context in which air power is applied that is most relevant.

Letters

The doctrine argues that as the levels of warfare have blurred, so too have the air power roles. It thus makes sense to strip the roles back to their fundamentals, which can then be applied across the spectrum of warfare, limited only by the law of armed conflict and a commander's imagination. Will the RAF still make deep attacks behind future battle lines where no other capability can reach? Almost certainly. Can we conceive a strategic role for air power from the fundamental tenet of Attack. Of course. But is the language of Attack more accessible to brother officers of the other Services and therefore more likely to encourage integrated operational planning from the outset? From comment received thus far, yes.

Finally, if the current debate started by DCDC comes to a successful conclusion, we will recommend to the RAF that its concepts and doctrine are aligned to a consistent simpler lexicon based on JDN 2/08. This could provide a vocabulary for air power that is easy to learn and more likely to resonate with our sister Services, the public and our political masters, all of whom currently struggle to understand what air power delivers in complex environments. The technology and application will keep changing, but the roles should remain constant if we get the fundamental expression right. DCDC will argue to keep it simple and stick to the fundamental 'big four': Control of the Air, Mobility and Lift, Intelligence and Situational Awareness, and Attack. If anybody can think of an air power capability, current or future that would not fit into this framework, I would love to hear from you!

Air Cdre Paul Colley

Where are the air power strategists? A response

In the last edition of *Air Power Review*, Gp Capt John Alexander took up the challenge in my original article and opened a dialogue. As with D Def S, I welcome the debate since it is only through the rigorous, intellectual examination of our craft that we will improve our appreciation of air power in every respect. Much of what Gp Capt Alexander says makes complete sence, but I am not convinced by his response that he fully understood my original point – for which the sin must lie with the author, not the reader. In particular, flattered though I am that he suggests that I had answered my own question, I suggest that the conundrum still has to be unpicked.

When studying air power history, one is always directed to the writings of Douhet as the starting point of air power thinking. With this I can hardly disagree, but I contend that Douhet's thinking was about methods, about equipment and about tactics, it was not a strategy. The subsequent events of the Second World War, when technology, production rates and the crucible of a war of national survival, allowed his theories to be tested to the point of destruction proved, in the main, that his core tenet was lacking: air power alone could not win a war. Now I acknowledge that there are two clear exceptions to this. First, the impact of the bombing during Operation GOMORRAH, the bombing of Hamburg that raised a firestorm in July 1943, could, if the RAF and 8th USAAF had been able to repeat the action on several more German cities, (they could not as they did not have the resources) have ended the War. Nevertheless, the impact on the Nazi regime was marked. Indeed, the spreading across Germany of the million or so refugees, with their tales of terror and impotence against the

terror from the air, shook the political leadership to its core. Second, it is indisputable that the two atomic bomb attacks on Japan did bring the Second World War to an end. However, if the only way air power can have such a strategic effect by itself, and not as part of a wider, Joint and Combined action, then the basis of our ability to lever strategic effect in isolation is surely flawed?

The same argument, I believe, holds good for Warden and Pape: they are tacticians not strategists for they are expounding how to employ the technology of the day to apply air power to the conflict of their time. While I firmly believe that the nature of war is unchanging its conduct is driven by the circumstances, not least the weapons available, and this therefore does change. Warden and Pape address air power in these terms and their writings, excellent though they are, are already showing limits in their utility. The writings of Douhet, Mitchell and Trenchard have likewise proven to lack longevity.

Am I being too harsh on those who we regard as possible air power strategists and too enamoured of the Maritime and Land strategists? I do not believe so. Taking again my point about history, if studying land warfare one might look at the writings of, say, Publius Flavius Vegetius Renatus whose Epitoma rei militaris is one of the most complete books of its era. But it is not a strategy, it is a description of how to wage war according to the needs and capabilities of the era. Where Jomini and Clausewitz, Mahan and Corbett differ is that their writings, although including elements that are applicable only to the times in which they were writing, contain much that has proven to be enduring. Douhet's book is, I suggest, not. Moreover, Clausewitz's thinking is widely quoted, including by air power writers (just think of the enduring Clausewitzian Trinity that remains as relevant today as when it was written). Furthermore, Mahan – and even more, Corbett – with their thinking about sea control have not only proven to be enduring in Maritime Circles, but their construct has proven to be equally applicable as a foundation to Space Power theory. Strategies, and the thinking of Strategists, endure; tactics to meet operational requirements employing the technology of the day, evolve.

The excellent thinking that NATO's Joint Air Power Competence Centre have undertaken, eloquently expressed by Gp Capt Alexander, very precisely captures the concept of air power and yet, and yet . . . It is still about employment, not art: it is still not that elusive key.

Let me go back to the beginning: what makes air power different from Land or Maritime? It is our different perspective of time and space, driven by the speed at which we move over the earth and the oceans, by the scale of our understanding of where we can have effect, and by the (relative) impermanence of both our presence and our effect. It is this unique exploitation of the third dimension and, arguably, our particular understanding of the fourth dimension that makes us, the air power practioners, different. Gp Capt Alexander has added significant value to the debate of how; I still search for the understanding of what air power is.

Gp Capt Ian Shields
Assistant Director, Air and Space
DCDC

Letters

Sir,

I should like to offer some additional perspectives on Gp Capt Al Byford's piece on the Battle of France in the last issue of *Air Power Review*.

Whilst I agree with the fundamental thrust of his piece I think there are some important aspects which are missing. He rightly points out that the grand strategic background was set by a Government decision which effectively reversed the policy of limited liability which had been in place for the previous two decades. It might be argued that this change was politically long overdue and that had it been implemented earlier diplomatic efforts to counter Hitler might have borne more fruit. For the RAF, however, it undermined the strategic assumptions on which the Service's organisational and industrial policies had been built.

It is a truism that RAF doctrine in the inter-war period had been anchored in strategic bombing, but it is an exaggeration to suggest that no consideration had been given to army co-operation. The RAF's 1940 doctrine manual actually contains some perfectly sensible doctrine regarding support of a land campaign. Its application in practice, however, was hampered by a number of factors.

First, the RAF's expansion schemes, and thus the underlying production policy, had been based on expanding Bomber Command and Fighter Command in accordance with the Government's strategy. This produced, unsurprisingly, bombers and fighters. Sir Hugh Dowding is frequently praised for his persistent refusal to recognise the legitimate calls for fighter squadrons to be sent to the BEF's air component. Few people understand that this position was not brought about by the disasters of May 1940 but had been his consistent stance from March 1939 onwards. As production priorities and orders could not be changed at the drop of a hat, fighter squadrons to support the BEF could *only* be provided at the expense of Fighter Command. Aside from the Stuka squadrons, which were not a large proportion of the *Luftwaffe* orbat, the overall make-up of the RAF and the *Luftwaffe* was not markedly different.

Second, the key problem was surely control of the air. The RAF was caught on the horns of a dilemma: whether to protect the home base, or protect the deployed Expeditionary Force. That is, to retain squadrons in Fighter Command where they were likely to be more effective as part of the Chain Home IADS, or send them to the Continent where they would be less effective because there would be no effective air defence system. Some on the Air Staff recognised this problem. Thus, the then Gp Capt John Slessor as Director of Plans was engaged in the staff talks with the French. He proposed that the air defence of the UK and France be treated as a single problem and that a joint organisation be set up to co-ordinate its defence. In purely doctrinal terms this was a perfectly sensible solution. However, it ignored the political, and perhaps more importantly, the logistical and technological aspects. The UK had a properly integrated system, no such system existed in France. The assets in the UK could only be "flexed" across to France at the cost of their operational effectiveness, and the range and speed of the aircraft was also inadequate in this respect. Therein lay the rub, as the *Luftwaffe* could and did exploit

operational surprise and its numerical, tactical and technological edge in the air to win control of the air. Once control of the air was lost doctrine and C^3 became irrelevant.

In 1944 the situation was reversed. The Allies obtained control of the air before commencing land operations on the Continent. They were thus able to keep a relatively small air defence component in the British Isles and a much larger fighter force on the Continent, which both maintained the high level of superiority and acted offensively in support of the land component. The *Luftwaffe* in turn found itself trying to reinforce its units in France from its home defence fighter units, but could not achieve any lasting effect because of Allied control of the air.

Sebastian Cox, AHB (RAF)

Integrated air operations – some ramifications for our modus operandi

ByAir Cdre Julian Stinton

Some years ago I would have accorded to the premise that jointness on operations has developed from deconfliction between components, through cooperation to integration – mostly as a result of technological development, better understanding, component evolution and operational maturity. However, the joint approach, though undoubtedly the holy grail for joined-up military endeavour in the contemporary operating environment, is not proving as useful to commanders as it might be, simply because fighting jointly, particularly in a 'PC' sort of way that embraces the diversity of approach and attempts to harmonise, or at least use equably, the different capabilities that each component brings to the fight is a difficult and sometimes sensitive issue. This is because of the way components are configured, armed and commanded, but also because we have not yet really worked out quite how we want to fight jointly – or even, dare I say, worked out precisely what sort of war we are in and where and how we must adjust our Modus Operandi (MO).

So, let me give you a flavour of current operations through commanders' mission and intent and leave it to you to deduce how we want to fight. Firstly Commander International Security Assistance Force (COMISAF)'s mission for the ISAF:

'To conduct military operations in the assigned area of operations to assist the Government of the Islamic Republic of Afghanistan (GIRoA) in the establishment and maintenance of a safe and secure environment with full engagement of Afghan National Security Forces (ANSF), in order to extend GIRoA authority and influence, thereby facilitating Afghanistan's reconstruction and contributing to regional stability.'

And to give you more of an Air flavour, the Coalition Force Air Component Commander (CFACC)'s mission in Iraq:

'To conduct air, space and information operations integrated and synchronised with Multi-National Force – Iraq (MNF-I) full spectrum operations and Multi-National Corps – Iraq (MNC-I) phased operations throughout the Joint Operating Area (JOA) in order to secure the population, defeat extremists and insurgents and enable Government of Iraq self-reliance until Iraq is stable.'

Now these are missions – and I appreciate that you might be able to deduce more about how we planned to fight from the supporting campaign plans and concepts of operations. If the campaign plan actually existed, in both cases you would find that we would be diving down into what air power does, what capabilities it plans to apply and how it is to be commanded and controlled, with liberal applications of the words 'joint' and 'effect' – but it wouldn't necessarily tell you how we intend to integrate the effects of those air operations.

This is not the first time we have used high-end, heavy-metal forces for missions for which they were not designed. It is still – just – an article of faith that the maintenance of a high-end technological warfare capability enables the use of forces across the conflict spectrum; and it is also true that the contemporary operating environment is a bit of a 'come as you are' party and that we are fighting the current wars as we must, rather than as we should. Many a commander – in all environments – is crying out for better connectivity, more lift or more Information, Surveillance and Reconnaissance (ISR) to give him more flexibility, higher tempo, more

situational awareness, better support – anything – to enable him to regain or maintain commanding advantage over an asymmetric component.

We all know that our configuration was dictated by state-on-state warfare. The UK Chief of Joint Operations (CJO) has the view that most of us were brought up in a world where forces were designed for find, fix, strike – but with the emphasis on striking power, rather than 'find'. In the contemporary operating environment, we almost need to invert our force balance and concentrate much more on the 'find' function. This means much more focus on ISR – in fact I would go so far as to suggest that this ought to be at the core of future UK air capability, rather than on the periphery.

However, ISR capability is not just about collection platforms and sensors, something that perpetuates the pointless inter-component ownership debate – it is about the product – intelligence and information for the use of commanders. The plethora of current ISR platforms and systems are environmentally stovepiped, work on different bandwidths, overlap, have an almost obsessive focus on full motion video, often at the expense of all weather capabilities such as Synthetic Aperture Radar (SAR), Ground Movement Target Indication (GMTI), or Burst Illumination Laser (BIL) and don't join up enough. Apart from thinking in terms of a single ISR battlespace, interleaving and cross-cueing capabilities and systems, we have to concentrate on the direction of ISR to 'find' in the broadest sense and crucially the production of that intelligence and information by analysts and its subsequent dissemination. Having 'found', we can then 'fix' and 'strike' – which for the air environment tends to mean increasing precision, timeliness, reach and persistence – which in layman's terms means working towards another silver bullet or technological quest – hitting a moving target through the weather. All great techno-focussed air capabilities to develop, but what if the main event isn't hitting moving targets? And in any case, why shouldn't we be spending more at the moment on improved connectivity, better integration and interoperability which might generate increased leverage for the joint commander?

The way Air is commanded and controlled also needs revision. All airmen can reel off the mantra of 'centralised control, decentralised execution' in their sleep. As a broad statement it encapsulates the airman's way of working, it embraces the principles of mission command, whilst keeping a grip on scarce assets or those air capabilities with theatre-wide application. It confirms the airman's innate ability to think at the theatre, operational or even strategic level, but in the dark tea-time of the soul – it is also there as a catchetism to reinforce or reaffirm air's independence, the accompanying, almost mandatory, modus operandi and the quest for component pre-eminence at the strategic and operational levels of war – as suggested in a recent RAND study.[1]

The structural manifestation of the mantra is the JFACC and the CAOC, originally designed to sit at the corps level, which contributes to the joint fight by resourcing and sequencing air effect on behalf of the Joint Force Commander, with appropriate high level, high quality liaison from other components – often notable by its absence.

As a mechanism for getting the best out of available resources and the almost industrial application of air power – there are few improvements to be made, apart from the development of higher tempo, more flexible, tauter, decision maker-to-shooter cycles and ever-burgeoning connectivity. The system works beautifully if you want to

take down Iraq, but when you have to stabilise Iraq and tackle the insurgency using the same C2 constructs and methodology, no matter how adaptable, you have problems. From your distant CAOC, perhaps a Falconer CAOC with a global capability based in Arizona, but lacking the 'Fingerspitzengefuhl', that fingertip feel for the battle, or the cordite in your nostrils – how do you resource the Iraqi National Army Joint Terminal Attack Controller (JTAC) and get the feel for the precise effect he wants or needs on a Troops in Contact (TIC)? Not only that, but how do you slew the majesty of theatre air power effect and bring it to bear on one of the nastiest, most difficult tactical problems for land forces – countering Improvised Explosive Devices (IEDs)? Air knows it has to adapt, that it has to think differently and that it just can't fight the bang – which is normally the start of something worse, so it has to look upstream for patterns of life, indicators, warning, hence the focus on ISR, persistent overwatch and technical countermeasures. Because of the strategic problems created by IEDs and their direct fixing effect on land force mobility, countering them becomes the joint main effort. What was initially a Land Component problem becomes a thoroughly Joint one and the 'all hands to the pumps' imperative forces Air to be a tactical adjunct, doing something – anything – to help the joint fight.

Counter-IED (C-IED) is not the most obvious territory for the most effective application of Air capabilities, but increased focus on this critical tactical facet (for the right strategic reasons) means that something else has to give somewhere else in theatre. Simply moving land forces by airlift surrenders the ground to the enemy and fixes us further, but showing willing, airmen are contributing intellectual and physical horsepower, innovating through alternative use of technology and Techniques Tactics and Procedures (TTPs), adapting to high-tempo problem solving and showing consummate liaison skills and nous at the point of contact. As previously with the problems of Air/Land integration outlined under Project CONINGHAM-KEYES, focus and engagement at the front, in the contact battle is getting the machine working clunkily – but well enough. The majority of the gains are at the tactical and sub-tactical levels, built around activity in the local context, using local resources. This puts the monolithic JFACC/CAOC structure on another planet in C2 terms, although I suppose it could be claimed that all this comes under the heading of decentralised execution – but wouldn't it have been easier if all the C-IED planning with all the players had been integrated in the first place – rather than mashed together?

I am not suggesting that it is time to ditch the mantra 'centralised control/ decentralised execution' or the structures that it has brought in its wake, but I do think it is time to be more flexible, without necessarily playing semantic games over phrases such as organic capability or assured support. There are certain air power roles and certain capabilities that require theatre-level C2. For instance, control of the air, something that is now accepted as a given by coalition land forces, but which still has to be fought for and maintained – in all its aspects – as the Israeli Air Force learned to its cost at the start of the Yom Kippur War in 1973; and what I will call 'strategic' ISR platforms: Rivet Joint, AWACS and the like. All need JFACC and CAOC C2 for their effective use. At the other end of the spectrum – decentralised control/ decentralised execution could see the chopping of air capabilities to a tactical commander in a certain area for a certain time. This construct is routinely applied by Special Forces, where it works well and could have applicability elsewhere, if the air C2 system had a more detailed and better understanding

of the local commander's requirements and priorities. All very well if you have the connectivity and the appropriately placed liaison personnel, but witnessing the arguments over the C2 of Harriers in Afghanistan on airborne alert (Al Udeid CAOC-controlled) gives the lie to the willingness of the C2 system to entertain such proposals. At the end of the day, having the flexibility to slide up and down the continuum of centralised/decentralised control to service pressing local requirements is the direction in which we need to go – without falling prey to fears of other components misusing air to put up umbrellas over their own.

Much of what I have outlined so far is part of the difficulty of operating jointly, perhaps borne of oversensitivity to the need to be seen to be 'being joint'. After all, agreement and acquiescence to the great joint project means having to accept the supported/supporting argument, which at its current worst, means commanders hijacking the 'I'm on the main effort' to mean 'I'm the main event, so you deconflict with me' – hardly conducive, or contributing to the most effective use of assets or capabilities in the joint endeavour. I might add that this is equally matched by the infuriating Air Component's assertion that we would really like to help, but we're rather busy shaping the battlespace at the moment – echoes of Normandy in 1944, but a live argument from Allied Force to Op Mar Karadad in Afghanistan last December.

So what can we do? We all talk about integrated air operations, but what does that mean?

It means understanding how you want to fight, what the strategy is, what the context is, what you are trying to do and most importantly – why and to what end? Sun Tsu said that strategy without tactics was the long road to victory, but that tactics without strategy was the noise before defeat. As Brits we have an aversion to strategy, preferring often to make the unfolding of a series of operations or their resultant, our 'strategy' – you may take your own views on operations over the last few years. But we need to have that comprehensive, cross-government, jointly agreed meandering road (a strategy) to underpin all that we do, or integrating effects or operations will be at best fortuitous, or a rather serendipitous outcome. Integration means integrated planning and that means components working together right from the beginning, being in each other's minds, understanding the context, limitations and cultural foibles of the other. Ideally – and I stress the word ideally – it means putting an integrated plan together, with all its psychological and physical, kinetic and non-kinetic, symmetric and asymmetric facets, working out the spatial ramifications of all the various activities and setting up appropriate command and control behaviours and organisation to support the whole – rather than vice versa. Better communications and connectivity and command direction of that C2 enabler to provide what is actually required, rather than unfocussed information will help; as will effective and honest recognition of the reach of capabilities in play, for instance Attack Helicopter, Army Tactical Missile System (ATACMS), or Nimrod MR2, rather than individual component aspirations for their possible use and therefore the battlespace needed – just in case. And don't worry; I'm not going to open up the Fire Support Coordination Line (FSCL) argument now!

But above all, what we need is a change in thinking and attitudes. Air power does not need defending, nor does it lack relevance. Air is here to stay, so airmen should be self-confident enough to promote their views, to allow for flexibility in application, according to other component requirements where

necessary, particularly if we integrate air operations in the way we must. This can be difficult. Being joint is always balanced by some sort of self-justification of why we are as we are and maintaining our individuality and independence. Striving for integration acknowledges that other components interplay with our own capabilities but tends to ignore our historical baggage – and demons. We need to better our understanding of air, for instance that Air Land Integration (ALI) is a subset of integrated operations – and that it is not just about integrating TICs and CAS – but also about, ISR, battlespace control, lift, spectrum management and space. We also need to appreciate air capabilities through the eyes of other components and through the prism of their requirements, particularly Land's at the moment – and not allow ourselves to be skewed, doctrinally or otherwise, by our close association with the USAF and its particular relations or frissons with its sister services (Pentagon politics).

Britain has a long history of coalition and integrated operations, if we wished to look deeper and to define them in those terms. True that they might not have always involved air, but there is plenty of read-across and pull-through for us novices (in our 90th year). Our relationships with the other components have waxed and waned, but they have always been best when close relationships have been established – and – let's be honest – when things haven't been going too well. We've done it a number of times before, but there is nothing like a real operational Horlicks, such as Dieppe or Lebanon 2006 for getting us back to integrating properly – something we would do well to remember in our current operational circumstances.

Note

1 Learning Large Lessons. The Evolving roles of Ground Power and Air Power in the Post – Cold War Era. David E Johnson - Rand 2007

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