

Air Power Review

Volume 20 Number 1

Spring 2017

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Royal Air Force Air Power Review

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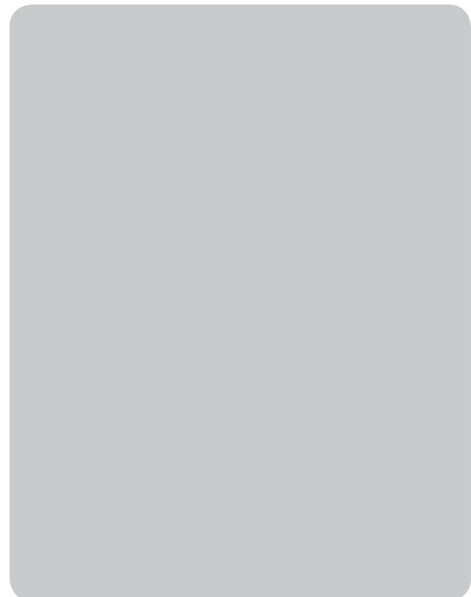
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Foreword

by Wing Commander Chris Hunter

This 2017 Spring edition of Air Power Review includes another eclectic mix of articles and viewpoints covering historic and contemporary themes. We include very welcome contributions from: British Army and RAF regular and reserve officers and a warrant officer, academia, USAF (ret'd) and CAS' Fellows, a diversity of perspective that is a strength of this journal. For all those budding authors out there, we would urge you to put pen to paper and engage in the broader air, space and cyber power debate.

We have 4 articles that remind of us of the need to not only read deeply into the history of air power but also to, when appropriate, challenge the historiography of events. Brigadier Roe's article on Air Power in Darfur shines light on a little known operation during 1916 in which air power played a key role. Warrant Officer Class 2 Barnes' analysis of the role of the air services in the Mesopotamian Campaign (modern Iraq) from 1915 to April 1916 is equally thought-provoking. He not only challenges the perception that the whole campaign was a failure but he also highlights the rapid transformation through adaptation and innovation of the air services involved. Squadron Leader (Ret'd) Stubbs re-examines the role played by RAF ground crew during the German invasion of Crete in 1941, concluding that the following political maelstrom resulted in an unnecessary reorganisation of RAF ground defence training. Finally, Mr Bill Pyke focuses on the influence of Air Marshal Sir John Slessor, an unsung Cold War strategist, on the development of Britain's strategic nuclear deterrent and his enduring legacy.

There are also three personal viewpoints, which are intended to be thought provoking and stimulate debate. Matthew Powell re-engages on the debate started by his article *The Battle of France, Bartholomew and Barratt: The Creation of Army Cooperation Command*, published in APR in Spring 2015 – the last word. Victoria Thorpe considers independence versus interdependence of the Services. Finally, Group Captain (Ret'd) Clive Blount debates that whilst the future of air power tends to be centred on the highly technical challenge of future general war against a peer competitor, a significant future challenge will also be remaining relevant and useful to our leaders in the run up to conflict and, hopefully, in the prevention of peer-on-peer competition.

This Edition also includes reviews of six books, reading any of which will enhance your personal professional development. In *Wiki at War* the author provides us with an insight into what a socially networked world means for future conflict and how dynamic the relationship between social networks and war is likely to become. *Superforecasting* is not a simple 'how to guide' on foretelling the future, but suggests that some people, though not traditionally expert in any particular area, do appear to be able to foretell the outcome of events over 'dart throwing monkeys'. *Shifting Sands* is a broad view of the continuities and contradictions present in the Middle East. *Runways to Freedom* is about RAF special air operations during the Second World

War and will resonate with all contemporary airmen and not only those familiar with the Special Forces world. *The New Tsar* looks at the leadership of a key competitor. Last, but no means least, is Dr Peter Gray's *Air Warfare: History, Theory and Practice*, a deep dive into the very essence of our profession.

As ever, the editorial team welcomes comments in response to articles, viewpoints and book reviews and is poised to publish constructive comments or counter viewpoints.

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Call for Papers



KING'S
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Air Power in an Age of Uncertainty

A One-Day Conference to be held at the Royal Air Force Museum in conjunction with the Air Power Studies Research Group, King's College London at the Joint Services Command and Staff College.

29 September 2017

Keynote Speakers:

Air Chief Marshal Sir Glenn Torpy and Colonel Professor John Andreas Olsen

Over the past two decades, airpower has become the “Western way of war” [...] because it offers the prospect of military victory without large-scale destruction and loss of life.

John Andreas Olsen (2015)

Since Operation DESERT STORM, air power has increasingly become the military tool of choice for Western governments. Air power has played a major role in conflicts since the end of the Cold War as part of state responses to violence in this period. As such, to understand the relevance of air power in this period, this conference, organised by the RAF Museum and the Air Power Studies Research Group of King's College London at the Joint Services Command and Staff College, aims to explore air power developments from the late-Cold War period through to the present day. The conference also seeks to bring together in one forum practitioners and academics, and wider Service, governmental and industry parties interested in the utility of air power. Themes to be explored might include, but not limited to:

Roles | Operations | Strategy, Theory and Doctrine Strategic and Operational Effect | Technological Developments Organisation and Policy | Air Force Culture | Ethical and Moral Issues National, International and Transnational Experiences

Twenty-minute paper proposals are invited from those working in areas related to the study of air power. Panel proposals are also welcomed. In addition to established academics and practitioners, the organisers are keen to receive proposals from postgraduate students, early careers scholars and relevant professionals.

By 31 March 2017, proposals should be submitted to the email below along with a title, 300-word abstract and one-page curriculum vitae. Panel proposals of three speakers should include

a panel title, 300-word precis of the panel theme as well as individual paper titles and abstracts. Additional conference details and registration information will be available soon. It is planned to publish the conference proceedings at a future date.

Organisers

Dr Ross Mahoney (RAF Museum)

Dr Bleddyn Bowen (King's College London)

conference@rafmuseum.org

Air Power in Darfur, 1916: The Hunt for Sultan Ali Dinar and the Menace of the Fur Army

By Brigadier Andrew Roe

Biography: Brigadier Andrew Roe is Commander 38 (Irish) Brigade. He is a graduate of the United States Army Command and General Staff College, the School of Advanced Military Studies and the Higher Command and Staff College. He holds a doctorate from King's College, London and is the author of two books and numerous articles.

Abstract: The Darfur campaign of 1916, against Sultan Ali Dinar, the one time official Government agent for the region, attracted little external interest at the time and remains largely unknown today. Of particular note, air power, in the form of a small detachment of 'C' Flight, of Number 17 Squadron, Royal Flying Corps (RFC) played a key role throughout the operation. Although not employed in the final pursuit of Ali Dinar, as the air detachment had been ordered to return to Egypt, aircraft helped in reconnoitring and attacking the Sultan's positions and also provided a tangible symbol of the might, reach and power of the British Army. The deployment of the Flight was an early example of model staff work and logistical planning, and underlined the adaptability and dependability of the RFC.

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Introduction

The brilliant work of the Royal Flying Corps (RFC) during the operations in Darfur will rank as one of the finest efforts of our Army airmen in the war. The airmen, who were detailed to act with [Lieutenant] Colonel Kelly against the Sultan Ali Dinar, had to move south at very short notice, and travel by sea, rail, and desert track for 2,000 miles before they could reach the barren spot from which they were to operate. Though the natives were not astonished to see machines in the air, they were surprised beyond expression when the men alighted from them. One who found speech was heard to say: 'the Government was always great, but now it is greater than ever'.

Background

The little-known operations against Sultan Ali Dinar², the Sudan Government agent in Darfur, in 1916, are of questionable historical significance when compared with the mightier conflicts of the time in Europe and Asia. It was, however, the largest military undertaking in the Sudan since the massacre of the army of Sudanese Dervishes on a plain near Omdurman on the 2nd of September 1898³. And it resulted in the addition of a large stretch of country to the administered territories under the Government of Khartoum, with total military victims on the 'British' side of 4 officers and roughly 25 other ranks killed and wounded. In contrast, estimates state that the Fur Army suffered over 1,000 casualties. Although unremarkable in terms of fatalities or wider global impact, the physical challenges that were overcome and the manner in which operations were resourced and conducted mark this intriguing colonial episode as a military feat of some distinction⁴. At its very heart, the campaign in Darfur is a telling example of 'superior organisation and firepower to overcome a more numerous but less-well-armed and less-well-supplied local force'⁵. Of particular significance to the *Air Power Review* readership, a key component of the operation was the effective early use of aircraft in desert warfare, at the end of a very long and challenging supply line. Their appearance had a profound moral effect on the locals and achieved impressive physical results, although Lieutenant John Slessor, who flew throughout the campaign and was to become a future Chief of the Air Staff, cautions that: '... the material results achieved [in Darfur] by air action were comparatively insignificant'⁶.

Sudan remained relatively quiet in the European media, figuring lightly throughout 1914 and 1915. The focus, predictably, was on the United Kingdom declaring war on Germany in 1914⁷ and the Second Battle of Ypres, including the first use of poison gas by the Central Powers on the Western Front, and the ill-fated Dardanelles Campaign, which both occurred in 1915. This was unexpected, considering the wars fought in the late nineteenth century between Anglo-Egyptian forces and those of 'the Mad Mahdi', Muhammed Ahmad bin Abd Allah, and his successor, Abdallahi ibn Muhammad, who both led uprisings against British and Egyptian rule⁸. The Great War appeared to make little impression on the people of the region or the allegiance of their leaders, although minor military operations did occur to stamp-out unrest. In December 1914, a number of patrols took place to re-establish order and protect friendly tribesmen in the Duk Fadiat district of Mongalla Province. Other patrols sought to punish the Nuer tribesmen of the Lau district, Bahr el Ghazal Province, who had attacked a

mission station. Lieutenant General Sir George MacMunn and Captain Cyril Falls note: 'A rather larger affair was the Lokoia patrol of January 1915, to punish the tribes of Jebel Lyria and Jebel Lunch, in the Mongalla Province, who were openly defying the Government'⁹. Other military activity occurred in February, March and August 1915¹⁰. But few were serious undertakings and even the rumours of a Turkish victory in the Suez Canal in early 1915 resulted in no discernible increase in overall violence or unrest. But that was all about to change when an Anglo-Egyptian force of 2,000 men entered Darfur in March 1916 on the hunt for Ali Dinar.

Fast forward a century and Darfur figures highly in today's news. The United Nations (UN) described Sudan's western Darfur region as one of the world's worst humanitarian crises. Local conflict, which started in February 2003 when rebel groups took up arms against the Government after allegations of regional neglect and oppression against Darfur's non-Arabs, erupted into widespread rebellion. The Government responded with a counter-insurgency campaign to stamp-out agitators, unrest and open revolt. This led to accusations of indiscriminate bombing from the air, the burning of homes and looting of livestock. Significantly, it resulted in the death of hundreds of thousands of civilians and the relocation of family groupings. Violence reduced after 2005, but again flared-up at the start of 2013. It was assessed that almost 400,000 people were displaced in the first half of 2014 alone and 100,000 people have left the area since the beginning of this year. The UN and African Union peacekeeping force in the region amounts to 20,000 troops, but has faced considerable criticism for alleged inactivity¹¹. British troops, in a non-combat role, have recently arrived in the region, where they are part of the UN peacekeeping mission. Their responsibility is to carry out engineering work to strengthen local infrastructure. The history of the region, therefore, has a renewed significance¹². But a century ago, British forces had a very different mandate and role.

Operations in Darfur – 1916

Darfur Province, the 'land of the Fur people', contained a complex mix of Arab and Black Muslim inhabitants in 1916. It was bounded in the north by Dongola and the Libyan desert, on the east (Kordofan Province) and south by administered provinces of the Anglo-Egyptian Sudan and on the west by the French central African territory of Wadai. It measured approximately 450 miles from north to south and 350 miles from east to west. The capital, El Fasher, a flat-roofed mud town, located *circa* 300 miles south-west of Khartoum, contained between 5,000 – 10,000 inhabitants. The total population of the province was under 1,000,000. Of particular relevance to military planners, the topography of the region is uniform sandy desert, covered with a low scrub and peppered liberally with large *tebeldi* trees¹³. Low ranges rise abruptly out of the flat central desert, and in the south-west a mass of low mountains, called the Jebel Marra, disrupt movement. Some of their heights reach over 5,000 feet. The climate is severe. Famine, resulting from extreme heat, routinely took its toll. Temperatures of 120 degrees Fahrenheit in the shade are not uncommon. And violent and unpredictable sandstorms are frequent. Water was particularly scarce in 1916 and determined the whole strategy of the campaign. The region had few wells, which were isolated and scattered, no permanent water

supply and there were few proper means of transport. Darfur was virtually un-surveyed at the time and mapping that did exist was inaccurate, crude and unreliable.

Until 1898 Darfur had formed part of the Dervish dominions, administered by a series of Dervish Emirs. When the British Army reached Omdurman in 1898, and battle on the plains of Kerreri looked likely, Ali Dinar, one of the Khalifa's¹⁴ more astute lieutenants, and a descendant of the old Sultans of Darfur, realised that a new order was imminent and that Dervish rule was in jeopardy. Seeing an opportunity, he fled south on the day of Kitchener's victory at Omdurman, taking with him a few thousand countrymen, who ultimately guaranteed his authority. They eventually reached the province of Darfur in 1899 and Ali Dinar established his cruel, tyrannical and rapacious¹⁵ authority in the capital. No Europeans were ever allowed into his kingdom¹⁶. Empty and waterless, with nothing of any value in the country, Britain and Egypt were broadly happy to leave Ali Dinar, the most powerful tribal independent ruler in Darfur, to his own devices. Stuart Hadaway notes in *Pyramids and Fleshpots* that according to the Foreign Office brief on the Anglo-Egyptian Sudan, Ali Dinar was 'left to go his own way', but it was well-known that his religious zeal was obsessive¹⁷. Despite a growing anti-British track record, until the outbreak of war in 1914, Ali Dinar was regarded as relatively loyal to his British neighbours in the Sudan¹⁸. He was appointed the official Government agent for Darfur in 1899 and adopted the title Sultan, carrying on the line of an independent Sultanate that reached back to 1650. He acknowledged Anglo-Egyptian suzerainty by the annual payment of £500¹⁹ to the Governor General, Baron Sir Rudolph von Slatin Pasha, rendered annually from June 1901²⁰. But Ali Dinar was ripe for exploitation and regional events helped transform his attitude.

Seeing an opportunity, Germany made attempts to stir Ali Dinar into rebellion, but with little real impact. He was also a target for Ottoman pressure; Egypt and Sudan were theoretical provinces of the Ottoman Empire until 1914, when Britain declared that Egypt was now a British Protectorate. Surrounding himself with hardliners and fanatics, who twisted, misinterpreted and falsified evidence, he was also influenced by his religious affinities with the Libyan leader of the Senussi people. The Grand Sheikh of the Senussi (Sayyid Ahmed al-Sharif), would later supply him with 250 rifles and boxes of ammunition down the great Arba'n camel route. German, Ottoman and Senussi complicity in the Sultan's belligerence was presented with great intensity in official correspondence – and perhaps exaggerated. Nevertheless, with numerous internal and external pressures at play, Ali Dinar's allegiance to the Sudan Government became increasingly tenuous. Interactions, particularly via communiqués, became strained and by April 1915, in an insulting letter to Sir Reginald Wingate, the Sirdar of the Egyptian Army and Governor-General of the Sudan, he formally renounced his allegiance to the Government. Moreover, he proclaimed *jihad* (holy war) against the Government in the name of the Sultan of Turkey. He also made clear his intentions to invade Kordofan and to drive the British to the sea. This was a troubling development.

Fortuitously, Ali Dinar's neighbouring chieftains did not support his ambitions. This was lucky for the Government; they were unable to spare troops from the Nile to deal with the Sultan

and many garrisons were already dangerously depleted, with ammunition stocks worryingly low. Lieutenant General Sir George MacMunn and Captain Cyril Falls posit: 'An interview with a British official might have had satisfactory results [in changing his motivations and goals], but unfortunately he would not admit one to his capital. He was treated with forbearance and given repeated opportunities to retreat from a position which in saner moments he probably regretted having assumed'²¹. However, by the beginning of 1916 it was clear that Ali Dinar was about to carry out his invasion threat. Active operations could no longer be avoided. A military expedition was seen as the most preferable course of action by the Government. But it was also viewed as beneficial to the French, whose colony of Wadi was on the western side of Darfur, and who faced negative fallout from the Sultan's actions²². However, the Fur Army was going to be no pushover and Ali Dinar would prove to be an elusive prey.

Ali Dinar's 'slave' army in 1916 consisted of between 3,000 – 4,000 riflemen and 1,700 cavalry. Formed into three divisions, they were, as a rule, badly trained and poorly supplied with ammunition. They were equipped with an assortment of modern and antiquated weapons, including .45 elephant rifles, muskets, double-barrelled shotguns and Italian rifles. These were acquired through trade, raids, gifts and Egyptian military disasters. Ammunition, crude but effective, was manufactured locally. There were also a significant number of men armed with spears, shields and swords, and a large number of horsemen – largely made up of Baggara tribesmen. The elite were the *mulazimin* or personal bodyguard of the Sultan. These tribesmen were armed with Martini-Henry rifles. Slessor notes post the campaign that: 'They [the Fur Army] had very little idea of tactics; their natural morale was low, as they were mostly slaves and hated their ruler, but they were capable when worked up to the proper pitch of Dervish zeal, of very desperate fighting. Until actually brought to bay before El Fasher they never put up any resistance worth speaking of, due a certain extent no doubt to the action of aeroplanes'²³.

To deal with the Sultan, Wingate concentrated an all-arms force of about 2,000 Egyptian and Sudanese troops at the important trade centre of En Nahud to reinforce the border, 90 miles east of the frontier of Darfur (Figure 1)²⁴. In early 1916 he visited the force, titled the British Western Frontier Force or Darfur Field Force (but flippantly referred to as the Waterless Fatigue Force) and ordered its commander, Lieutenant Colonel Philip James Vandeleur Kelly, 3rd The King's Own Hussars (attached to the Egyptian Army), to cross the frontier and capture the well-centres of Um Shanga and Jebel el Hilla²⁵. Both were the first permanent water supplies to the west of En Nahud and on the road to El Fasher. Importantly, they were essential logistic steppingstones to any further operations in Darfur. The advance began on the 16th of March, with the well at Um Shanga captured with little difficulty. Jebel el Hilla, due to a lack of water *en route*, was more difficult, but ultimately fell to the advancing force on the 21st, despite a brush with a force of 800 enemy horsemen. Both successes helped to restore British prestige in the region and weakened Ali Dinar's resolve.

Kelly now faced a dilemma. Should he continue the advance immediately to El Fasher, the capital town built on the sides of a depression, and potentially face severe water shortages?

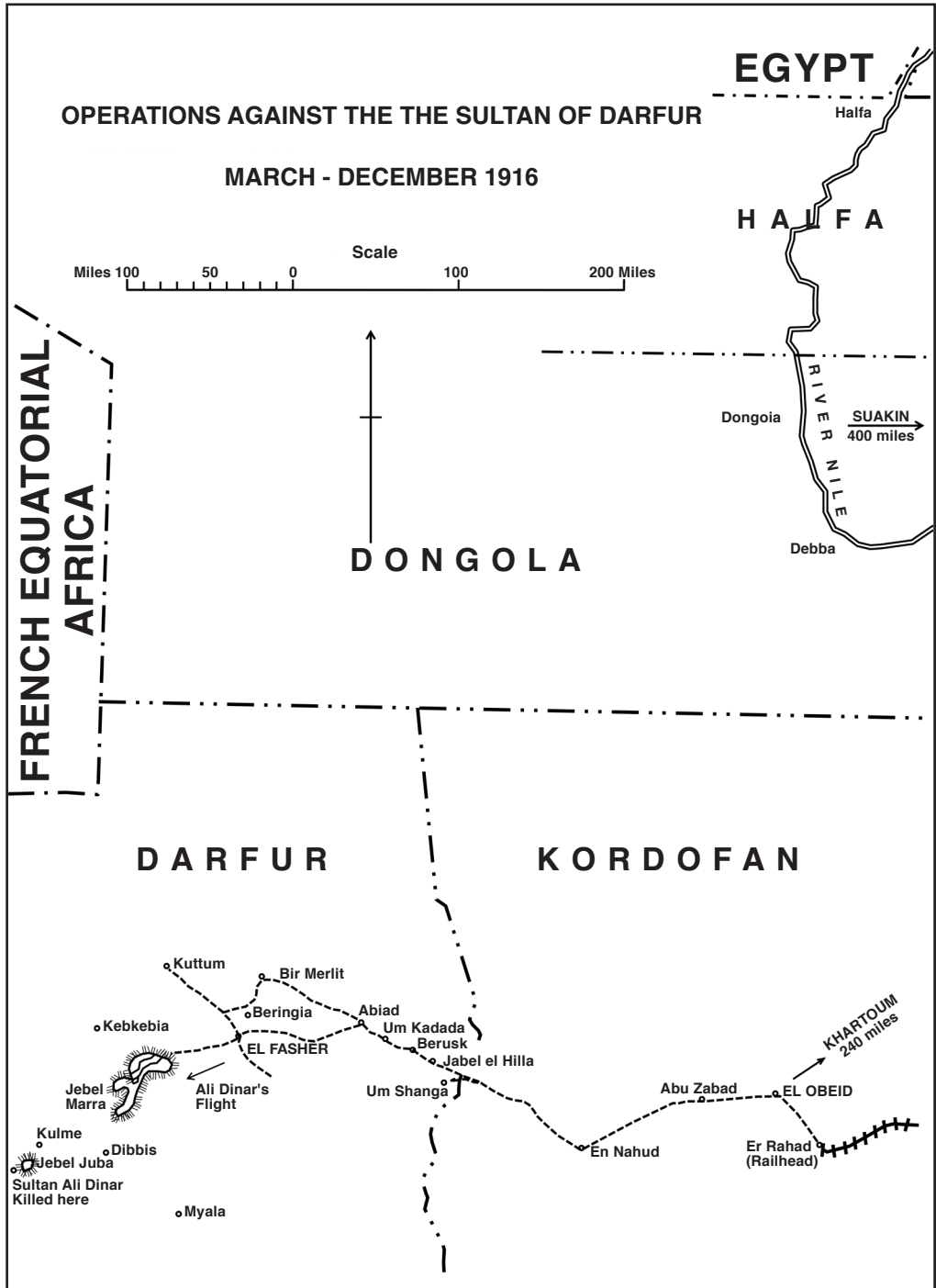


Figure 1: Operations against the Sultan of Darfur March – December 1916

Or wait until the rainy season (July to September when 15 to 20 inches routinely fell each year) when the ground would prove to be very difficult, but a larger ground force was sustainable? The advance on the capital was an undertaking of difficulty and risk under any circumstances. Relatively waterless and without roads, it was a distance of 250 miles. Advancing in the dry season would assist in pinning the enemy down to the well line and make it more difficult for the Fur Army to take part in raids on extended lines of communication. Moreover, any delay might be interpreted as weakness and post the rains could leave the country more favourable to guerrilla warfare. But there were other factors to consider. H. A. Jones notes in *The War in The Air*:

... Wingate was anxious to include in his attacking force a detachment of aeroplanes, not only because of the help they would afford him by reconnoitring and bombing Ali Dinar's positions, but also because they would provide a symbol of the might and power of the British Army. The sudden appearance, out of the blue, of flying chariots such as no one in Darfur had seen before was calculated to impress on Ali Dinar's followers the futility of resistance²⁶.

Kelly decided to press on as quickly as possible. During April, further advances within the frontier secured Berusk, Um Kedada and Abiad, with little enemy resistance. Preparations began for the advance on El Fasher. It was clear that the dispersal of Ali Dinar's main army in El Fasher – including most of his recalled provincial garrisons – would prove to be the sole effective guarantee to the security of Western Sudan²⁷.

The Arrival of the 'Flying Chariots'

The challenges of employing rudimentary air power in Darfur were significant. It was anticipated that the attack on El Fasher, where Ali Dinar's main force of between 4,000 – 6,000 riflemen and spear and sword-armed auxiliaries were located, would begin in May, taking advantage of the full moon. May and June are the hottest months of the year, with temperatures soaring above 120 degrees in the shade²⁸ and 135 degrees in the direct sun. The impact on aircraft, personnel and logistics was great. Water, left in metal containers in the sun, boiled uncontrollably. Heat significantly reduced the petrol supply too through evaporation²⁹. It also warped woodwork – particularly propellers. The laminations shrunk and pulled out at the boss³⁰. Large dust-devils were common and there were frequent, unexpected (on the part of the barometer) and menacing *haboubs*, or sandstorms. These severely hampered visibility, making it particularly difficult to see anything on the ground, with drifting dust routinely inhibiting flying operations³¹. *Haboubs* usually occurred in the evening.

Sand would also jam the Lewis guns. Landings and take-offs always threw-up significant clouds of dust and sand. The Royal Aircraft Factory-type tent hangars used were not sand proof, making routine maintenance difficult. Iron screw pickets had to be used to secure the portable canvas hangars as wooden pickets were eaten by white ants³². Indeed, all wooden surfaces had to be protected by a highly poisonous alcoholic solution to prevent the entry of ants (and other boring insects) into any woodwork. The rainy season, which starts to take hold in mid-June,

brings stormy weather, torrential downpours and a thick haze. The featureless country and lack of detailed mapping hindered navigation. Plants with very sharp, two inch-long hard thorns, were *ubiquitous*. Any forced landing could result in the puncture of a tyre. Nor was there any real hope for the survival of a pilot if he was lost or captured by the enemy³³. Equally challenging, the transportation of machines, hangars, repair shops, fuel for the whole operation and other necessary equipment, like fitters' benches, would test even the most competent logistic officers. Supply lorries, used frequently once rudimentary roads were constructed, were marooned for whole days in soft, yielding sand up to the axles. Logistic success was only attained by the first-rate organisation of Major V. W. R. C. Groves of Headquarters RFC, Egypt and other supporting personnel. The supply difficulties were formidable; the country had been depleted of transport animals and it was necessary for this expedition to raise and equip ten Army Transport companies of 200 camels each. Wingate noted more broadly in his dispatch:

It will be realized [sic] that a most careful and comprehensive organisation [sic] was required to convey some three thousand men with stores, guns, aeroplanes and other bulky equipment of a modern expeditionary force ...³⁴

The nearest aviation and personnel assets were those of 'C' Flight of No. 17 Squadron, based at Suez. These had been operating against the Turks in the Sinai Peninsula, but were allocated to the Anglo-Egyptian Army for the expedition. The commander of the detached Flight was Captain E. J. Bannatyne³⁵. On the 11th of May, two RFC two-seat B.E. 2c biplanes, equipped with the reliable 90 Royal Aircraft Factory engine³⁶, arrived at the landing strip at Jebel el Hilla, prompting a message of congratulations from Wingate. Having flown-up from Er Rahad, where they were assembled and operated initially from the dried end of a lake, their role was to support the ground column. These aircraft were frail contraptions of fabric and wooden bracing struts, with wires and glue holding the aircraft together. Er Rahad contained a tin locomotive-shed which held two fully erected aircraft. Two further machines were held in reserve at En Nahud, where sheds of wood and tin were constructed to house the aircraft. For good reason, it was not considered practical to fly the machines the whole way from Suez, the journey being fraught with many practical difficulties. Instead, a number of means of transport were used: first, a four-day, 800-mile journey by sea from Suez to Port Sudan; next, a six-day, 900-mile transit by train to El Obeid or Er Rahad (on the Kordofan railway)³⁷; finally, once the aircraft were assembled, a 350 mile flight saw the aircraft arrive at their destinations. Meanwhile, all of the supplies had to initially travel on camel transport. These ships of the desert transported two hangars, spare engines and undercarriages, all fuel, ammunition and technical equipment, as well as rations and water³⁸. A rough road network was constructed subsequently forward from the railheads to allow mechanical transport to ease the logistic burden³⁹. This, it was hoped, would in time extend to El Fasher, a direct-line distance of 350 miles.

The duty of the aircraft supporting the columns in the advance was to: (1) reconnoitre ahead of the forward elements of friendly forces⁴⁰; (2) keep any villages or well centres under

observation; (3) destroy enemy detachments by direct action where necessary; (4) scout for water; and (5) protect the column against surprise attack. Flights, as a rule, usually started at dawn when the air was relatively calm, but many occurred in the afternoon. As the day progressed, bumps, owing to the heat, became severe and cloud cover increased⁴¹. Challenging rising and falling currents, especially near hills, were also a regular hazard. Information to ground commanders was dropped by message bag; there was no wireless equipment in the aircraft. Face-to-face discussions were necessary, especially with the RFC officer (an observer or spare pilot) accompanying the ground force. He was responsible for ground-to-air communications, advice on RFC capabilities and the sighting of ground signals. Selected landing places were cleared, often by members of the Sudanese Camel Corps with broad-bladed knives. Then, large signals, made of long strips of white cloth, were placed on the ground. Black symbols, which were experimented with, did not 'show up well'⁴². However, these markers routinely disappeared unless guarded, '... and the new robes of sheikhs' wives was evident of the uses to which the pilfered material had been put'⁴³.

It was extremely difficult to navigate cross-country in Darfur. The landscape had an extreme sameness about it – uniform sand, scrub and low bush. Camel convoys provided a useful directional guide to pilots as did broken-down 3-tonne Leyland lorries. But slow-moving columns of camels and khaki⁴⁴-clad men were often difficult to spot from on high. Captain Bannatyne spent three hours in the air searching for the column on the 22nd of May – 'but failed to find it'⁴⁵. This was not uncommon. Large arrows, routinely made of calico, were placed at 30 mile intervals to aid pilot navigation or to help identify a force. But these too were often stolen by the locals or eaten by goats or white ants. Arrows, 25 feet long and 3 feet wide, were most effective. Stolen arrows often made pilots question how far they had travelled, especially if they were expecting to see a cloth marker. Fires, lit by local officials on receipt of a warning that an aeroplane would be passing, helped pilots to identify the cloth arrows, but were viewed as 'quite useless as a guide'⁴⁶. On occasions, Sudanese troops acted as observers to point the way. Slessor recalls that Bashawish (Sergeant-Major) Badda, a tall Berber, about six foot four inches, who had fought under the Khalifa against Kitchener at Omdurman, accompanied him on his first flight from Er Rahad to Jebel Hilla:

I was not sure that this was an awfully good idea. Bashawish Badda had never before seen anything more mechanical than a camel in his life. I need not have worried. The old boy wormed himself into the front seat between the centre-section struts without turning a hair and took me straight to Hilla, following the rather indistinct tracks through featureless bush country⁴⁷.

The seemingly *ubiquitous* Slessor notes that: 'These operations involved what for those days were very long flights, of four and five hours' duration, and for this purpose pilots used always to fly alone with a large bucket tank fitted in the observer's seat. Bannatyne on one occasion did a total of eight and a half hours' flying in nine hours ... [which had an impact] not only to the pilot but to the engine'⁴⁸. A remarkable achievement under the trying conditions. But while

it was often difficult to identify the long slow-moving columns of khaki-clad soldiers, the Fur Army was usually easier to identify, either unclothed or wearing a dirty plain (white), striped or chequered *jibbehs*, with or without coloured patches. Most wore a white turban. Even so, grazing camels could easily be mistaken as the enemy from the air depending on light conditions.

The Hunt for Sultan Ali Dinar

With the ground force poised for advancement at Abiad and the RFC well-set to support operations, daily reconnaissance flights occurred over El Fasher. These sought to update commanders on troop dispositions and Ali Dinar's personal movements. Aircraft also dropped propaganda leaflets (small green handbills), urging the Sultan to surrender and the civil population to evacuate the area. These were of two kinds. The first sought to deny the false rumour that the 'invading' troops intended to force Christianity on the people⁴⁹. The second type explained that aeroplanes would be dropping bombs, and that the young, old and women should relocate⁵⁰. Due to a shortage of water, the ground force departed Abiad in two columns on the 15th and 16th of May (a slow-moving column 'A' and a mobile column 'B'), reuniting 40 miles west of Abiad and 28 miles short of Bir Melit, where there was a good supply of water⁵¹. Bir Melit, a large well centre and the last on the line to El Fasher, was subsequently bombed (four 20-lb Hales bombs were dropped) and machine-gunned (2½ drums of Lewis gun fired) from the air⁵², after a low-flying aircraft, piloted by Bannatyne, was fired-on from the villages; a bullet hitting the propeller⁵³. An enemy force, estimated at approximately 500, had been holding-up in the village. The attack resulted in the enemy leaving the area at pace⁵⁴. On the return journey, a message was dropped informing the ground force that water was available in the wells and that the enemy had fled. But, due to the severe temperatures and general fatigue, the ground force advance was postponed until the 22nd. During this three-day halt several aerial reconnaissances were carried out and the enemy were reported in force north of El Fasher, but the country was clear of enemy for the next 15 miles. Slessor, flying a reconnaissance flight on the 19th of May at an average height of 2,000 feet, notes simply:

Flew in a southerly direction. Struck the El Fasher road about 2 miles S [south] of MELIT.

Country all clear. Apparently good road, many villages empty others occupied by ordinary civilian population⁵⁵.

Unfortunately, the weather was now worsening and the air was full of sand and dust, making it increasingly difficult to make anything out from the air. A shower of rain fell on the evening of the 21st, resulting in a particularly thick haze on the 22nd. But there was little time to waste.

Underway again, this time in square formation⁵⁶, the ground force came into contact almost immediately with enemy scouts and, in turn, more serious opposition. It was necessary on numerous occasions to halt and bring the guns into action to disperse the large number of

enemy horsemen and camelry (totalling 800). The country was rough, broken and covered with small sand dunes and scattered bushes. There were significant areas of concealed ground. Visibility, as a result, was restricted and it was difficult to see more than a few hundred yards in any direction. At about eleven o'clock a main force of about 2,600 riflemen were sighted⁵⁷, holding a strong position, consisting of trenches and fortified buildings, close to the village of Beringia, 12 miles north of the capital. This Fur concentration was quickly shelled to gain the initiative, while the force prepared itself⁵⁸. This key position contained Ali Dinar's best troops and commanders and outnumbered Kelly's force. In true Dervish style, after an advance of a company without specific orders, Ali Dinar's force threw themselves against the rifles, machine-guns and artillery of the well-drilled Sudanese force with battle flags flying for 40 minutes. Their bravery was no match for the intensive fire, including artillery guns firing case ammunition⁵⁹, although some of the attackers fell within only ten yards of the firing line. Signs of wavering in the enemy's ranks provided an opportunity, and Kelly ordered the advance⁶⁰. With a well-drilled, orderly force advancing at pace, the enemy broke and fled. The Fur casualties amounted to well over 1,000 casualties (including 231 dead and 96 seriously wounded). Although due to their apparent ability to withstand wounds that others would have succumbed to, many more walked or staggered away from the battlefield. Ali Dinar's force was defeated, but minor attacks occurred against Kelly's force throughout the night.

On the morning of the 23rd, when Kelly's force was advancing on El Fasher, the enemy rear-guard of horsemen was repeatedly attacked by machine-gun fire from Slessor's B.E.2c. At the same time, Slessor came across the remnants of Ali Dinar's army emerging from the southern end of the town. There were some 2,000 rallying round the Sultan's banner. *The Times* notes:

... Lieutenant Slessor saw 2,000 enemy cavalry drawn up in reserve outside the town, and attacked them with bombs and machine-gun fire. The horsemen scattered in all directions and took no further part in the fighting. When he began bombing the cavalry the lieutenant saw a group surrounding a banner. He aimed a bomb at the party, and later information points to the Sultan having a narrow escape, two of his servants and his own [white Bishareen] camel being killed by the bomb⁶¹.

Slessor, in his reconnaissance report of 23 May 15, recalls the situation straightforwardly:

Left HILLA 5.15, ABIAD 6.35, arrived EL FASHER 7.40. Saw large numbers of enemy in Town. Proceeded to KHULDINGI, arriving 8.5 [sic]. Nothing to be seen. Returned to FASHER, 8.30. Saw our shells bursting over village just north of [EI] FASHER. Flew over target and saw large numbers of enemy's cavalry, who fired on machine from the saddle. Bomb dropped on them also machine gun fired. Enemy fleeing in confusion to EL FLASHER & saw them pass through the Town and out south of it where they joined about 2,000 enemy. I bombed this body which retired in disorder. Then bullet entered my thigh. I proceeded north to EL FASHER to look for our Force but 'haboob' obscured everything, so returned ABIAD, flying by compass. Arrived ABIAD 11.5 [sic]. Report ends⁶².

Ali Dinar had a narrow escape but, during the attack, Slessor, flying at low altitude, was wounded by ground fire and had to steer with his hand instead of his foot on the way back to El Hilla, his difficulties being greatly increased by a storm that appeared unexpectedly and strong headwinds⁶³. The bullet was removed from his leg that day, but not before he brought detailed news of the victory at Beringia. The triumph was subsequently transmitted to Wingate from the aerodrome. However, due to his injury, Slessor was invalided back to the United Kingdom and played no further part in operations in Darfur. For his actions he was awarded the Military Cross. It was subsequently alleged that Ali Dinar shot at the aircraft with a sporting rifle purportedly given to him by the Governor General.

Kelly's mounted troops entered El Fasher at ten in the morning without opposition. Four guns, numerous rifles, a significant haul of ammunition and a plant for the manufacture of gunpowder were captured. It was now inhabited by women, children and old men. The following morning Ali Dinar fled south with his remaining followers into the desert. His destination was the perceived security and remote fastness of the inaccessible Jebel Marra – a journey of one and a half days across waterless desert. During the early stages of his withdrawal, the fleeing force was bombed from the air⁶⁴. H. A. Jones posits: 'The morale of the enemy troops was destroyed by this unexpected form of assault and they broke into small parties, and later reports showed that many died of thirst in the desert because they could not bring themselves to return to El Fasher, where they might again be attacked from the air'⁶⁵. Danger to the Sudan was now effectively over, but there was no hope of tranquillity whilst Ali Dinar was at large.

Kelly was unable to order his force to pursue Ali Dinar. Transport animals were exhausted and there was a pressing shortage of supplies. Seeing an opportunity to play for time and a favourable compromise, the Sultan sent a number of envoys to discuss favourable terms. Renouncing his sultanate in the process, these included allowing him to live with his family quietly on his lands. Initially the talks appeared positive and in late June, with the rainy season impending, 'C' Flight was ordered to withdraw back to Egypt. Its utility had come to an end and the Flight was needed elsewhere. Negotiations continued until the 1st of August, when Kelly drew a final halt to discussions. Surrender of all the enemy forces became the sticking point and Ali Dinar was stalling for time. In the meantime, the ex-Sultan was facing a different challenge. A number of his followers revolted and rebellion followed. The remaining force, loyal to Ali Dinar, now amounted to roughly 1,000 men. This was large enough to pose a problem to those remaining government forces and to keep the district in disorder. To counter this threat, military posts were established at key locations (Kebkebia and Dibbis) in September and October. These outstations helped result in another series of failed dialogues. Again, Ali Dinar failed to act in good faith. In October a mobile force departed to corner Ali Dinar. Hearing that the force at Kulme, 45 miles west of Dibbis, was suffering from sickness and starvation and was unlikely to offer resistance, Major H. J. Huddleston, the force commander, decided to seize the initiative. He occupied Kulme on the 3rd of November after only minor resistance. However, on arrival, it was found that the main body of the rebels had retired in a westerly direction towards Sugai⁶⁶.

The mounted troops caught up with Ali Dinar's fleeing force on the 6th of November in the area of Jebel Juba. In the attack that followed, the ex-Sultan was killed; he was shot through the forehead. Beside him lay his wounded son, Mohammed Fadl and close by were two more sons, Husseyn and Seif el Din, waiting to surrender. The place where he met his death was near the frontier with Wadai, which had suffered as a consequence of the rebellion in Darfur. Subsequently, numerous prisoners were taken, a significant amount of arms and ammunition were secured, as well as 600 cattle⁶⁷. This was to be the final act in the ex-Sultan's rebellion. The Darfur campaign was finally over. Order returned to the region and for those who participated in the campaign, the reward of the silver Khedive's Sudan Medal of 1910, with clasp 'Darfur 1916', followed⁶⁸. The £500,000 (£30,500,000 today) bill for the cost of the expedition was sent to the Egyptian Government in Cairo for payment by the Egyptian taxpayers.

Conclusion

The occupation of El Fasher led to the final consolidation of the Anglo-Egyptian Sudan. Darfur, until that point, was the only province within the Anglo-Egyptian sphere of influence which was not under direct control of Khartoum⁶⁹. It is noteworthy that the force engaged throughout the campaign was purely Egyptian (principally Sudanese soldiers), although commanded by British officers and supported by the RFC. Air power, in the form of a small detachment of 'C' Flight, of No. 17 Squadron, RFC operating at extreme length from its original base location, played a key role throughout the operation. Although not employed in the final pursuit of Ali Dinar, as the air detachment had been ordered to return to Egypt, aircraft helped in reconnoitring and attacking the Sultan's positions and also provided a tangible symbol of the might, reach and power of the British Army. The rudimentary B.E. 2c biplanes were indispensable elements of the force package. The deployment of the Flight was also an example of model staff work and logistical planning, and underlined the adaptability and dependability of the RFC. There was rarely a reported case of an engine running anything other than efficiently; a significant achievement considering the extreme climatic conditions. And lessons were quickly identified and best practice distributed. The Flight War Diary notes that: '... in this climate ½ gallon [of oil] pumped into the [illegible engine part] after the first hour, and during each subsequent hour gives excellent results in keeping an engine running.'⁷⁰ It was also the first time that many of the Sudanese and Egyptians of Kelly's force had seen the employment of air power. Major A. J. Potts, who took part in the campaign, recalls: 'For the first time astonished troops saw the beautiful sight of an aeroplane gleaming against a golden sunrise as it turned in a downward circle to land on the prepared stretch of ground. "The ship of the air" brought down the house. "By God! our General is very clever," murmured the marvelling soldiery ...'⁷¹

But the high frequency of flights and constant danger, no matter how successful, also had its challenges. Lieutenant Bellamy was found to be in a state of collapse on the 22nd of May, after a particularly challenging flight. The Flight War Diary notes simply: 'MO [Medical Officer] reported mental strain'⁷². Slessor was shot through the thigh and other pilots and crew had

fallen sick, lost their nerve or become exhausted. The aircraft too had taken a battering during the campaign and needed a deep overhaul to maintain their readiness on return to Suez. Despite these realities, the RFC performed with great skill and distinction and this was a useful foretaste of how air power could be successfully integrated with ground forces to achieve tactical and operational success. It was a model that would become the standard across the far reaches of the British Empire in the interwar period⁷³. Warfare had now entered a new and very different age. Air power was a 'must have' for any ground commander facing a tenacious, dispersed and unpredictable foe. But operations in Darfur are also a telling example of how early intervention – at reach – prevents dangerous situations getting worse. Wingate realised that it is often better to stamp-out a spark travelling along a fuse well before it reaches the explosive charge than allowing it to detonate and deal with the fallout.

In an interesting postscript, in connection with the news of the capture of El Fasher and the defeat of Ali Dinar's troops, the German habit of deliberately publishing false rumours was in evidence once again. The following wireless message was issued:

According to reports from Constantinople, Ali Dinar, the Iman of Darfur, has declared a Holy War against England. The Iman is already marching against the Northern Sudan with troops and 8,000 camels. He has driven the English forces before him, and his plan is to advance in concert with the Senussi. The statement that the English have beaten the troops of the Iman is false. The English are in full flight, retiring on the Nile. – Reuter⁷⁴.

Nothing could have been further from the truth and no doubt brought a wry smile to the convalescing Slessor.

Notes

¹ *The Times*, 'Airmen's Work in Darfur: Bombing The Sultan's Party', 7 August 1916.

² His real name was Zakariya Mohammed Al-Fadi Abdel-Rahman Arrasheed. He was nicknamed Ali Dinar ('Ali is hell') by his mother for being naughty and difficult to deal with as a child. He was born in February 1865 and the name 'Ali Dinar' followed him even when he became the Sultan of Darfur.

³ Omdurman wiped out the disgrace of General Gordon's murder at the fall of Khartoum 13 years before. See: Pollock, J. *Kitchener: The Road to Omdurman* (London: Constable, 1998) and Trench, C. C. *The Road to Khartoum: A Life of General Charles Gordon* (New York: Norton & Company, 1979).

⁴ *The Times*, 'The Conquest of Darfur: A Desert Campaign Without a Hitch', 26 October 1916.

⁵ Hadaway, S. *Pyramids and Fleshpots: The Egyptian, Senussi and Eastern Mediterranean Campaigns, 1914-16* (Stroud, Gloucestershire: The Military Press, 2014), 83.

⁶ Slessor, J. *The Central Blue: Recollections and Reflections* (London: Cassell and Company Limited, 1957), 643.

⁷ After Germany's invasion of Belgium.

⁸ Hadaway, *Pyramids and Fleshpots*, 81.

⁹ MacMunn, G. F. and C. Falls. *Military Operations, Egypt & Palestine: From the Outbreak of War with Germany to June 1917* (London: The Imperial War Museum, 1928), 146.

¹⁰ *Second Supplement to The London Gazette*, 25 October 1916, Number 29800, 10365.

¹¹ *International New York Times*, 'Report Accuses Sudan of 'Scorched Earth' Tactics in Darfur', 30 September 2016.

¹² Of note, the ramshackle 'jungle' camp in Calais, France is home to numerous migrants from Sudan. The camp sits only 31 miles from Great Britain – their ultimate goal.

International New York Times, 'Inside the Migrant 'Jungle' in France, 26 September 2016.

¹³ The great girth of the hollow trunks of the tebedi trees stored a significant percentage of the region's water supply. It was estimated that each tree could hold up to 500 gallons.

¹⁴ The civil and religious leader of a Muslim state.

¹⁵ Slessor, *The Central Blue*, 644.

¹⁶ The Inspector General, Baron Sir R. von Slatin, was for many years the chief intermediary between the Government and Ali Dinar.

¹⁷ Hadaway, *Pyramids and Fleshpots*, 81.

¹⁸ Jones, H. A. *The War in The Air: Being the Story of the Part Played in the Great War by the Royal Air Force – Volume V* (London: The Naval and Military Press Limited, 2002), 171.

¹⁹ *The Times*, 'Conquest of Darfur Completed: The Ex-Sultan Killed', 14 November 1916.

²⁰ *Second Supplement to The London Gazette*, 25 October 1916, 10366.

²¹ MacMunn and Falls, *Military Operations*, 148.

²² *Second Supplement to The London Gazette*, 25 October 1916, 10368.

²³ Slessor, *The Central Blue*, 646.

²⁴ *Second Supplement to The London Gazette*, 25 October 1916, 10367.

²⁵ Desert wells had small openings about two feet square to prevent sand falling in and the water lay at considerable depths. The water was drawn-up in a skin bladder on the end of a long thin rope.

²⁶ Jones, *The War in The Air*, 171-2.

²⁷ *Second Supplement to The London Gazette*, 25 October 1916, 10367.

²⁸ Sun screens to protect the aeroplanes on the advance landing grounds were designed, and special propeller screens were constructed.

²⁹ Intense heat caused aviation petrol tins to burst, and evaporation was so great that a consignment of seven cases supposed to hold 56 gallons contained only 37 gallons. *The Times*, 'Airmen's Work in Darfur: Bombing The Sultan's Party', 7 August 1916. This was even more evident when petrol was being carried on camels. Cases were wrapped in grass matting but, even so, evaporation averaged nearly fifty per cent and some tins arrived at the front empty.

³⁰ Slessor, *The Central Blue*, 654,

³¹ AIR/1/2250, 'War Diary of 'C' Flight, Number 17 Squadron in Darfur Campaign for 1st May – 23rd June 1916', General Notes.

³² 'White ants were a great nuisance; everything had to be raised off the floor or specially protected as white ant will eat through practically anything except metal'. Slessor, *The Central Blue*, 654.

³³ Each aircraft carried: 10 x Very lights; 1 x bottle of drinking water; 1 x iron ration per officer;

and 2 sheets (for ground signals) 18' x 3'. Pilots also carried a Very pistol and clasp knife. The following emergency signals were in standard use: 'T' – the commencement of the emergency landing ground; 'F' – engine failure, machine all right; 'L' – undercarriage broken; 'Y' – aeroplane completely broken, not worth saving; 'A' – pilot and passenger injured; 'W' – one injured; 'N' – petrol shortage; 'V' – oil shortage; 'C' – propeller broken; and 'K' – require help.

³⁴ Sir Oliver Wingate, Naval and Military Despatches, Part VI, August 8, 1916, 172, quoted in Slessor, *The Central Blue*, 645.

³⁵ This consisted of 3 officers and 15 men.

³⁶ The 90 Royal Aircraft Factory engine throughout stood up extraordinarily well under very adverse conditions.

³⁷ The aeroplane cases were protected from the sun by a double covering of grass matting.

³⁸ One Royal Aircraft Factory-type tent hangar took 28 camels to carry, and the long roof girders had to be slung between 2 camels placed end on. Specially selected camels carried the heavier loads, '... and usually died afterwards.' Slessor, *The Central Blue*, 652. Long treks on camel back were very trying to inexperienced personnel; the camels supplied were all transport (*hamla*) camels and there were very few riding camels.

³⁹ *The Times*, 'The Conquest of Darfur: A Desert Campaign Without a Hitch', 26 October 1916.

⁴⁰ To assist with long distance reconnaissance requests, the following ground signals became standard: 'I' – reconnaissance required of El Fasher; 'II' – reconnaissance required of Bir Melit; and 'III' – reconnaissance required of Sayan.

⁴¹ AIR/1/2250, War Diary, 21 May 1916.

⁴² *Ibid*, 16 May 1916.

⁴³ *The Times*, 'Airmen's Work in Darfur: Bombing The Sultan's Party', 07 August 1916.

⁴⁴ A light shade of yellow-brown.

⁴⁵ AIR/1/2250, War Diary, 22 May 1916.

⁴⁶ *Ibid*, 16 May 1916.

⁴⁷ Slessor, *The Central Blue*, 17-18.

⁴⁸ *Ibid*, 653; *The Times*, 'The Conquest of Darfur: A Desert Campaign Without a Hitch', 26 October 1916.

⁴⁹ The leaflet also denounced Ali Dinar; promised justice (and religious freedom once he was gone); clemency and confirmation in office for the tribal chiefs who submitted; and humanitarian relief.

⁵⁰ Jones, *The War in The Air*, 175.

⁵¹ MacMunn and Falls, *Military Operations: Egypt & Palestine*, 150.

⁵² AIR/2250/1, War Diary, 17 May 1916.

⁵³ *The Times*, 'Airmen's Work in Darfur: Bombing The Sultan's Party', 07 August 1916.

⁵⁴ *Second Supplement to The London Gazette*, 25 October 1916, 10369.

⁵⁵ AIR/2250/1, Flying Log, 19 May 1916.

⁵⁶ The advance over broken sand hills in square formation often resulted in parts of the square being on high ground and the remainder entirely lost to view.

⁵⁷ *The Times*, 'Darfur Tribesmen Surrendering: Military Stories Captured', 02 June 1916.

⁵⁸ *The Times*, 'A Sudan Revolt: Sultan of Darfur's Capital Taken', 27 May 1916.

⁵⁹ Artillery ammunition that exploded into fragments.

⁶⁰ *The Times*, 'Darfur Tribesmen Surrendering: Military Stores Captured', 02 June 1916.

⁶¹ *The Times*, 'Airmen's Work in Darfur: Bombing The Sultan's Party', 7 August 1916.

⁶² AIR/1/2250, Reconnaissance Report, Lieutenant Slessor, 23 May 1916.

⁶³ AIR/1/2250, War Diary, 23 May 1916.

⁶⁴ *The Times*, 'Complete Victory in Darfur: The Sultan's Plight', 31 May 1916.

⁶⁵ Jones, *The War in the Air*, 176.

⁶⁶ *The Times*, 'Conquest of Darfur Completed: The Ex-Sultan Killed', 14 November 1916.

⁶⁷ *Ibid.*

⁶⁸ The Khedive's Sudan Medal was a British Empire campaign medal presented to those who participated in operations in the Egyptian Sudan for which no other separate medal was intended. The medal was instituted in 1911 and was awarded by the Khedivate of Egypt for service in Egyptian Sudan between 1910 and 1921 for operations as defined by clasps worn on the medal ribbon.

⁶⁹ *The Times*, 'The Sudan Victory: Fine Work by the Egyptian Army', 28 May 1916.

⁷⁰ AIR/1/2250, War Diary, 15 May 2016.

⁷¹ Pott, A. J. *People of the Book*, (London: Blackwood and Sons Limited, 1932), 163.

⁷² AIR/1/2250, War Diary, 22 May 15.

⁷³ Of note, it preceded the Somaliland campaign in 1920, where air power ('Z Force') was used, by four years.

⁷⁴ *The Times*, 'The Sudan Victory: Fine Work by The Egyptian Army', 28 May 1916.

'Complete Failure': The British and Dominion Aerial Re-supply 1915-16

By Warrant Officer Class 2 Paul Barnes

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Abstract: This article examines the role of the air services in the Mesopotamian Campaign from 1915 to April 1916 in general, and specifically the attempted aerial re-supply of British and Empire forces besieged in the town of Kut Al-Amara in 1915-16. The surrender of Kut Al-Amara to the Ottomans in April 1916 was, until the surrender of Singapore to the Japanese in 1942, arguably the single worst shock to the prestige of the British armed forces since surrender at Yorktown in 1781. This article will critically analyse the historiography of the Mesopotamian Campaign and suggest that the shock of defeat has imposed a meme of complete failure on the Campaign which is, in fact, far more nuanced. In terms of the air services, it will suggest significant and rapid transformation through adaptation and innovation which has been lost due to poor information management and the powerful meme of failure.

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Introduction

Major-General Sir Charles Vere Ferrers Townshend, KCB, DSO, was General Officer Commanding (GOC), the Sixth (Poona) Division of the British Indian Army besieged in the town of Kut Al-Amara by Ottoman imperial forces from December 1915 to April 1916. Widely vilified at the time, and since, for perceived flaws of character and professional incompetence, his dismissal of the utility of aerial re-supply in the attempted relief of Kut Al-Amara has nevertheless remained the received view amongst historians since the end of the Great War.

This article will critically analyse the available primary sources from the United Kingdom and Australia to re-assess the efficacy of the aerial re-supply capability in 1916. The article will initially embark on a detailed historiography of the Mesopotamia Campaign from 1914 to 1916, looking at the development of ideas and opinions since the Great War to suggest an understanding of how the conventional view of aerial re-supply as a failure came to be such a potent meme. Following that, a narrative account of the British and Dominion air services' role in the Campaign will seek to isolate the strengths and weaknesses of air power in Mesopotamia, leading to a close analysis of transformation in contact by those air services, and specifically an examination of the efficacy of aerial re-supply as a method of mass logistic provision in 1916. The purpose of this article is not merely to tell a largely untold story and thereby suggest a revision of received wisdom, although it certainly aims to do that, but it also aims to offer an examination in microcosm of human and technological interface in contact and the vital importance of learning and influence in change and military success.

Technology is vitally important in warfare, but it is not an independent variable; for technology to enable military success it must itself be enabled by human ingenuity¹. Human agency is thus transformational; it is not technology which changes the character of warfare, rather it is humanity's reaction to technology in terms of innovation, learning and adaptation². It must be borne in mind, however, that whilst technology creates an opportunity for change, and the relationship between humanity and technology determines the direction of transformation; politics and power largely determine the speed of change³. Innovation and adaptation must also be seen merely as stages in a developmental continuum, the currency of which is knowledge. In order to bring about a successful transformation, new knowledge must be widely promulgated and adopted⁴. Knowledge management is thus a key piece in the transformation jigsaw; knowledge must be embedded and managed in order to both protect organisational memory and enable further development⁵. Aerial re-supply emerged during the Great War as just such an innovation; taking a technology, the aeroplane, and adapting it to deliver supplies to positions which could not, at the time, be re-supplied conventionally. Critically, differences in the effectiveness of knowledge management and political patronage would have important ramifications for the capability. Learning is, then, vital to military success, but is as nothing without good knowledge management and strong political advocacy. This article will argue that far from Townshend's 'complete failure', the effort at Kut Al-Amara

successfully proved the utility of the concept and also demonstrated considerable practical success in application.

The military operations conducted by Indian Expeditionary Force 'D' in Mesopotamia between 1914 and 1916 have been the subject of a good deal of literature commencing from the end of the Great War. The first stage of operations in Mesopotamia, which ended with the fall of Kut-al-Amara in April 1916, became the subject of the Mesopotamia Commission of 1916-17 following the fall of the Asquith premiership in December 1916. The Commission was highly critical of the preparations for war of the Government of India, military decision-making during the Campaign, and the standard of medical and logistic provision prior to April 1916⁶. The public interest generated by both the Campaign and the Commission saw, from 1920, a number of autobiographical works by those in command, such as Townshend, but also Staff and Regimental Officers like Major Edward Sandes and Captain Edward Mousley⁷. These works tended to be defensive in nature, perhaps unsurprisingly given the critical findings of the Mesopotamia Commission, and, certainly in the case of Sandes and Mousley who were besieged in Kut, rather less than objective when considering the efforts of the relief force. It is from this period that a perception of aerial re-supply as a curiosity and a failure, rather than a serious capability, emerges.

This view, whilst dominant, was not, at that time, universal and more balanced writers, particularly the three authors of the Official Histories of the Mesopotamia Campaign, Brigadier General Frederick Moberly, Frederic Cutlack and Henry Jones examined aerial re-supply far more evenly⁸. In the mid-1920s a study by the Indian Army Staff College in Quetta largely re-iterated the findings of the Mesopotamia Commission, but was rather more understanding of the effects of the fog of war on command than the largely civilian Commissioners. This view was reinforced by civilian and ex-service writers such as J Fitzgerald Lee, Sir Arnold Wilson, Dorina Neave, and P.W Long who sought to shift the blame for the failures of the Mesopotamia Campaign onto politicians in Delhi and London and away from the military⁹. It was perhaps predictable that this perspective would face a counter, with authors such as Sir George Buchanan, a veteran of the campaign and acquaintance of the CinC of the Army of India, General Sir Beauchamp Duff, seeking to absolve General Headquarters (GHQ) India of responsibility for the Campaign¹⁰.

The view of Kut as a political failure, and of aerial re-supply as a novelty, remained until the late 1960s when, perhaps feeding on both prevailing anti-establishment sentiment and historical revisionism, a number of books criticising the military commanders were produced¹¹. The view that aerial re-supply was a failure at Kut was re-iterated in these books such as A.J. Barker's works and Miller's *Kut: Death of an Army* (1969), which remained the standard work on the Mesopotamia Campaign for almost forty years. The coalition campaign in Iraq from 2003 re-awoke interest in the Mesopotamia Campaign of 1914-18. Since 2006 a number of works have been produced which broadly follow Miller's thesis and which are highly dependent on the accounts of men like Sandes, but which demonstrate little, if any, original, archive-based

research¹². Indeed one of Barker's works has been re-packaged, in entirety, to take advantage of the wave of interest in Iraq¹³. The language used in the titles of these works also betrays the publisher's intent to tenuously link the Great War campaign of 1914 – 1918 to the United Kingdom's role in the Coalition campaign of 2003 – 2009; the cynical may see this spurious nexus as a ploy to sell books in an oversaturated market.

Recently, however, there have been more rigorous attempts by academics such as Charles Townshend, Nikolas Gardner and Nadia Atia to re-examine the Campaign¹⁴. These authors demonstrate, almost for the first time in terms of the Mesopotamia Campaign, a degree of archive-based research, but are perhaps less concerned with operational history than the social and political aspects of the Campaign, and do not attempt to question the historic assumptions about the efficacy of aerial re-supply. That is not to say that in recent years military historians have not examined the more operational aspects of the Campaign. Kaushik Roy and Andrew Syk are notable in this regard, whilst Michael Mol Kentin has produced an exceptional overview of Australian aviation in Mesopotamia in his *Australia and the War in the Air* (2014)¹⁵. These works, however, are unconsciously affected by national mythologies; post-colonialism in the case of Roy, and Australian exceptionalism in the case of Mol Kentin. Additionally, these works do not seek to tackle many of the original assumptions of the Mesopotamia Commission, not least of which regards the effectiveness of aerial re-supply. It would seem then, that the role of aerial re-supply in the relief of Kut Al-Amara and indeed the role of the air services throughout the early part of the Campaign in Mesopotamia has been largely lost in the historiography and has seen little, if any, rigorous academic research since the opening of the archives in the late 1960s. Perspectives formed almost a hundred years ago therefore remain largely unchallenged, unaffected by periodic revisionism, and hence ready for re-consideration and review.

Air Power in the Mesopotamia Campaign 1915-16

'Like most of the roles for air power that emerged in the war's first eighteen months, aerial re-supply indicated reasonable foresight: the aeroplane would come to occupy an important part in the supply chains of military forces later in the twentieth century. In 1915, however, the vision outstripped the available technology.'

Michael Mol Kentin¹⁶

This section examines the first operational use of aerial re-supply in 1916. In doing so, it firstly provides an extended, broad narrative of the campaign in order to place both the capability, and the use of air power in general, in context. This is important given the tendency to divorce the history of air power from the wider operational contexts in which it is utilised. It then examines the organisation of the air services in Mesopotamia in depth, uncovering the degree to which aviation was an afterthought for those in command. It goes on to examine the concomitant effects that the lack of preparedness, resource and understanding had on the performance of the air services during the period March 1915 – April 1916, and the degree to which innovation and adaptation were used to bridge the resultant gaps. With these vital contexts established, the section moves to provide an in-depth analytically-

driven examination of the use of aerial re-supply in 1916. The efficacy of the capability is investigated and it is suggested that its interpretation as a failure has been overstated; rather it should be seen as a limited success.

The British invasion of Mesopotamia in early November 1914 was ostensibly a sensible extension of British foreign policy in the Persian Gulf¹⁷. In the century prior to 1914, British policy towards the Ottoman Empire had been one of managing political decline and preserving regional stability; this was achieved by a combination of local alliances with Arab rulers in the Persian Gulf and the ever-present potency of the Royal Navy. When war came, and despite the misgivings of the Viceroy of India, Lord Hardinge, who was concerned that any operation which compromised the territorial integrity of the Ottoman Empire risked turning Muslim religious loyalty to the Turkish Caliphate into open rebellion throughout the British Empire, the British Indian Army was given the task of securing the Mesopotamian oilfields and pipelines at the head of the Persian Gulf¹⁸. In essence, however, the fear of jihad in Britain's empire was considered a less serious threat to Britain's strategic position than access to fuel for a Royal Navy increasingly dependent on oil¹⁹.

The Force, Indian Expeditionary Force 'D' (IEF'D), consisting of the 6th Indian Division under Lieutenant General Sir Arthur Barrett, easily achieved its limited objectives and was rapidly reinforced with a second division, the 12th Indian Division, under Major General George Goringe and the 6th Indian Cavalry Brigade, under Major General Sir Charles Melliss VC²⁰. The ease with which the Force captured its objectives encouraged a degree of hubris, leading to what would be termed in the twenty-first century, "mission-creep". The political advisor to the expedition, Sir Percy Cox, and Barrett's replacement as Force Commander, Lieutenant General Sir John Nixon, devised an ambitious plan to advance up the Tigris river and capture Baghdad²¹. Importantly, whilst Nixon's plan had the tacit support of the Government of India, Whitehall was both against any extension to the operation and blind to the advanced plans for such an operation²². Climate and geography made all military operations in Mesopotamia, but especially cavalry reconnaissance and artillery observation, extremely difficult; transport was largely limited to the rivers, the ground was either marshland or desert, fodder was virtually non-existent, and artillery observation, still at this time by direct-fire only, was obscured by heat hazes²³. Nixon recognised that the aeroplane could fill this capability gap, and requested that GHQ India provide aerial reconnaissance and artillery observation assets for the advance of the 6th Division, under Major General Charles Townshend, on Baghdad²⁴.

The story of aviation in Mesopotamia is one of the creation of an air force from a standing start in less than four months. Many of the problems from which the IEF 'D' aviation component would later suffer can be traced directly to its founding; insufficient aeroplanes, poor logistics, and weak administration. GHQ India had virtually no aeroplanes in its inventory in 1915, and almost all its trained aircrew were already serving with the RFC on the Western Front. Following a negative response from Whitehall, the Government of India requested that the governments of Australia and New Zealand provide aircrew and ground personnel to

support IEF 'D'²⁵. These governments agreed to provide a 'Half-Flight' of thirty personnel under the temporary command of Captain Henry Petre Australian Flying Corps (AFC), a former Chief Instructor at the Australian Central Flying School at Point Cook²⁶. This Unit was to be facilitated by aeroplanes and an organisational architecture provided by GHQ India²⁷. Major P.W.L. Broke Smith Royal Engineers (RE), a former Chief Instructor at the British Central Flying School, was appointed Deputy Assistant Director Aviation (DADA) on the staff of GOC IEF 'D' with responsibility for providing Nixon with advice on aviation matters and creating and running an aviation infrastructure in support of the flight, with facilities in India and Mesopotamia. In addition to Broke Smith, a Flight Commander, Captain H. L. Reilly of the 82nd Punjabis and an engineering officer, Captain W. R. Wills Indian Army Reserve of Officers (IARO), were appointed by GHQ India in March 1915. Critically, however, they were appointed with no organic administrative support²⁸. Broke Smith would have a little less than two months to prepare the aviation component for operations. The inevitable lack of preparedness would necessitate an organisational dependence on innovation and initiative which, whilst laudable, would have ramifications for the provision of air support.

The 'Half Flight' arrived in Basra on 26 May 1915, less its Mule Transport section, and found that Broke Smith had already established an Aerodrome and Park at Basra for the repair and assembly of aeroplanes, and a Depot at Bombay, under the command of Captain E. L. Baxter IARO, providing spares, equipment, tooling and theatre reception for all personnel²⁹. The aeroplanes they were expected to operate, two unarmed Henry Farman Shorthorns, were waiting for them in crates on their arrival and would be in the air within 48 hours. This initial operating capacity was clearly insufficient for offensive operations. The inclusion of aviation in the plans for Townshend's advance to Baghdad, which began only two days later, demonstrates both IEF 'D's urgent requirement for reconnaissance and its lack of understanding of aviation. Broke Smith made it clear in his Report, however, that the aviation component was a work in progress; the aspiration being for it to rapidly expand to a point where it would 'become self-sufficient'³⁰. Self-sufficiency being defined as two operational flights with a third, training flight based in Basra³¹. Broke Smith was already, in May 1915, trawling the IEF 'D' for officer volunteers for aircrew training and had requested floatplanes to take advantage of the rivers, lakes and marshes³².

Broke Smith was clearly industrious; in the space of two months he had travelled from India to Mesopotamia, identified suitable operating and accommodation facilities for IEF 'D' aviation assets and personnel, built an aerodrome, infrastructure and workshops and organised precious river transport assets to support the advance to Baghdad³³. Additionally, in his role as a staff officer he was advising Nixon of the aircraft types and number he would need for the next phase of operations³⁴. It is apparent, however, that whilst the aviation organisation was not short on adaptability and drive, with such a herculean workload, day-to-day administration, including knowledge capture, would be subsidiary activities. The frenetic tempo of those first few days certainly encouraged innovation and adaptation, but was unsustainable. It is notable that all of Broke Smith's written replies to requests at this time are handwritten and in pencil,

despite being a staff officer in a large headquarters³⁵. In addition to this, insanitary conditions, the effects of heat and other illnesses took a heavy toll on the limited manpower available³⁶. The 'Half Flight' commenced operations in support of Townshend's Tigris advance on 28 May 1915, flying only two relatively untested aeroplanes.

The initial advance culminated in the capture of Al-Amara on 3 June 1915. Although successful in providing reconnaissance and rudimentary artillery observation, the aviation capability was already under severe strain and delivering outputs far below what was commonplace on the Western Front at the time; indeed, on 16 June 1915, Broke Smith was reminded by Nixon's HQ that his role was that of a Staff Officer, not an operational pilot³⁷. Broke Smith was clearly struggling to balance his role as a Staff Officer with a requirement to both administrate the aviation capability and cover operational flying missions, thus highlighting the immaturity of the organisation and the inexperience of Broke Smith's subordinates. Nixon's decision to divide his force in order to advance up the Tigris and Euphrates rivers simultaneously, further exacerbated the problems of the 'Half Flight', with the two operational aeroplanes being used on both fronts from 22 June 1915. The 'Half Flight' had not, at this stage, received any further aeroplanes, although two Caudron G.2s would arrive at Basra on 14 July 1915, and the intense heat and illness rates continued to take a heavy toll on aeroplanes and manpower alike³⁸.

Nixon recognised the value of his aviation assets and understood that, without reinforcement, even their limited outputs were unsustainable. His requests for additional aeroplanes and aircrew, whilst accepted positively in India, Australia and New Zealand, could not be provided immediately³⁹. In these circumstances, and given both the change of the Campaign's status since November 1914, and the ongoing offensive operations in the Dardanelles and Egypt, the War Office asserted its authority; absorbing the 'Half Flight' into Number (No.) 30 Squadron RFC as 'A' Flight, and adding a 'B' Flight from Egypt. Simultaneously, the personnel of the 'Half Flight' were taken on the British establishment, with all commissions converted to the RFC. Although the role of DADA remained, Broke Smith lost authority over the flying component, being limited to providing advice on aviation to HQ IEF 'D' and facilitating the aviation support function for No. 30 Squadron RFC⁴⁰. Major S.D. Massy RFC was appointed to command the Squadron, with Captain Reilly relegated to command of 'A' Flight and Captain E.M. Murray Queen Victoria's Own (QVO) Corps of Guides commanding 'B' Flight⁴¹. The effect in materiel terms on the aviation capability was immediate; from late August 1915 the number of aeroplanes was doubled to eight, albeit the Martinsyde S.1 aeroplanes provided were obsolescent in the context of the Western Front by that time⁴². Critically, however, little changed in terms of administration and although much had been learnt by Broke Smith, his staff, and the personnel of the 'Half Flight', particularly in relation to flying in extreme temperatures, the lack of a mechanism to formalise learning left this knowledge as tacit and thus easily, and rapidly, lost. This failure to formalise and the concomitant loss of knowledge supports the work of Catignani, Foley et al, and O'Toole and Talbot which warns against the perils of tacit learning⁴³. The 'Half Flight' thus remained dependent on innovation to span the administrative gap but failed to create a mechanism to learn from these innovations.

Broke Smith's influence was further challenged from September 1915 with the arrival of two Shorts seaplanes of the Royal Naval Air Service (RNAS) from East Africa. The Seaplane detachment was commanded by Lieutenant Colonel R. Gordon Royal Marine Light Infantry (RMLI), an experienced pilot who had commanded an RNAS seaplane detachment in action against the German battle-cruiser *Königsburg* in Tanganyika⁴⁴. Gordon's rank created a problem for HQ IEF 'D'; he out-ranked both Broke Smith and Massy but commanded far fewer aeroplanes and personnel than either and was wholly inexperienced in operations in the desert. After a good deal of correspondence, including a discussion of their relative seniority and the dates of their commissioning, a compromise was arrived at granting Gordon the appointment of 'Flying Commander' with authority over the overall direction of all flying operations, but subordinate to IEF 'D'⁴⁵. This compromise left Broke Smith as principal aviation staff officer, with control over the aviation support function for the RFC and as the key advisor to Nixon, and Massy in undisputed command of his Squadron, but allowed Gordon to direct operations in the field and also protected the independence of the RNAS detachment.

The effect of this arrangement was to further compromise the fragile administration of the aviation capability; the RFC and RNAS continued to operate through separate supply chains, there remained no effective method of knowledge management beyond the Unit War Diaries, and the flow of information was often seriously impeded by the complicated command arrangement. The situation came to a head following Townshend's withdrawal from Ctesiphon to Kut Al-Amara in early December 1915; a combination of a rapid retreat, loss and lack of supplies and transport, and the attritional effect of weather and high flying hours left the aviation capability without a single airworthy aeroplane⁴⁶. Massy comments on these failings in the Intelligence Summary of No. 30 Squadron RFC War Diary for February 1916; his frustration with the Staff and his chain of command is palpable; they enjoy the benefits of aviation but fail to understand its fragility⁴⁷. As a result of this almost complete failure, the command arrangement was revisited, and on 9 March 1916 the RFC and RNAS elements were effectively merged under the command of Gordon, but remaining under Army authority⁴⁸. This arrangement received joint Admiralty and War Office approval and considerably improved the supply and transport situation, although neither administration nor knowledge management saw any benefit as a result of unity of command.

Despite the administrative and logistic difficulties faced, and notwithstanding the absence of an effective system of knowledge management, the aviation capability of IEF 'D' remained highly innovative. A.J. Barker claims that the aviation capability in Mesopotamia was underdeveloped: 'even aerial photography was unknown'⁴⁹. In the specific instance of aerial photography, Barker does not acknowledge that resources were scarce and that storing photographic paper and developing chemicals in the field, in temperatures in excess of fifty degrees centigrade, was a significant achievement. His comment also ignores the regular use of aerial photography by No. 30 Squadron RFC from February 1916⁵⁰. Prior to that, it is apparent that IEF 'D's aerial reconnaissance usually depended on Observers' sketch maps, however,

Broke Smith proposed posting RE cartographers to No. 30 Squadron RFC as a pragmatic solution to the problem of delay and human memory, thus demonstrating effective bottom-up innovation⁵¹. Barker is also incorrect in a wider sense; solutions to problems are rarely identical, instead they are influenced by environmental and other factors, so that the answer to a problem in verdant and resource-rich Flanders may be unsuited to the deserts of the Middle East. A further example is provided by the development of a system of proto-fighter control during attempts to relieve Kut Al-Amara.

From mid-February 1916, enemy aircraft began observing and bombing the positions of the Tigris Column from an Ottoman aerodrome a short distance to the north of Kut Al-Amara. Although besieged troops in the trenches closest to the enemy aerodrome could clearly see the German aeroplanes being prepared for flight, there was no way to pass this intelligence to HQ Tigris Column and thence to No. 30 Squadron RFC. A solution was devised whereby pre-arranged codes were sent 'in clear' by wireless to HQ Tigris Column as soon as a German aeroplane left its hangar, followed up by further messages giving codes for direction of travel once it had taken-off, thus giving British aeroplanes an opportunity to intercept the enemy aircraft⁵².

IEF 'D's aerial capability was almost wholly independent of the RFC and RNAS from March until September 1915, and thereafter operated on a semi-detached basis. There was little, if any, opportunity for inter-theatre learning and even when pamphlets and manuals made their way out from France they tended to be either outdated or irrelevant to the local situation; for example, from February 1916 No. 30 Squadron RFC began ranging artillery using a pamphlet, OB/114, which had been issued in France in July 1915 and which had since been superseded⁵³. Solutions to problems therefore tended to be local in nature and were not promulgated beyond the Theatre, both because of a lack of a system of knowledge management internally, and the absence of a formal system of inter-theatre knowledge exchange.

In many ways then, the development of air power in the Mesopotamian theatre was homogenous, evolving to adapt to local conditions and demands; a military Galapagos. Its dependence on innovation was a function of the shortages and other weaknesses it faced, it adapted in order to solve problems pragmatically, creating largely bespoke solutions. On several occasions, these unique solutions were rejected by the War Office because the solution was at odds with common practice in France and Belgium, for example, the idea of posting cartographers to No. 30 Squadron RFC was rejected because cartography was not a recognised function of operational units, but rather a matter for an intelligence branch in a headquarters⁵⁴. Aerial re-supply, as a method of mass logistic provision, was devised as such an empirical solution to a local problem, feeding Townshend's troops besieged in the town of Kut Al-Amara and cut-off from any means of conventional relief. The concept underlying it was, however, far from novel, 'the dropping of limited quantities of ammunition and food supplies to beleaguered garrisons or in other emergency' is mentioned in a 1911 programme for a demonstration to the Parliamentary Aerial Defence Committee at Hendon⁵⁵. Aerial re-supply at

Kut Al-Amara is unique, however, in that it represents the first use of the capability in wartime and on such a large scale.

Townshend's advance on Baghdad had been repulsed at Ctesiphon on 22 November 1915 and he had rapidly withdrawn to the town of Kut Al-Amara to re-supply⁵⁶. His Division arrived in the town on 3 December 1915 and was surrounded by Ottoman forces four days' later. Townshend accepted the siege, as he believed he had stores and provisions sufficient for at least a month and in the belief that the siege was, in effect, halting a potential Ottoman advance on Al-Amara, and thence to Basra via Qurna⁵⁷. Every attempt by British troops to relieve the siege met with failure, due largely to a combination of stubborn Turkish resistance, limited numbers of available assaulting troops, insufficient supplies, and tenuous lines of communication exacerbated by the annual flooding of the Tigris⁵⁸. By careful rationing and the planned butchery of draft animals and cavalry horses, Townshend's force was able to hold out until 29 April 1916, before surrendering to the Ottoman commander, General Halil Bey. A siege which Townshend had expected to be lifted within thirty days had in fact lasted 147, cost the British 23,000 casualties and ended in the captivity of the Kut Al-Amara garrison⁵⁹. The reasons for the failure to relieve Kut Al-Amara remain hotly debated, however, in large part they have at their root the failure on Townshend's part to give a firm and consistent estimate of his food stocks. Too often Townshend's staff would find more food, thereby extending resistance, only after the relief forces had spent themselves attempting a breakthrough; had the food estimates from Kut Al-Amara been accurate initially, the relief force may have summoned sufficient mass to breakthrough and relieve the town⁶⁰. Additionally and arguably, waiting until the eleventh hour to approve aerial re-supply limited the effect that re-supply could bring, thus further highlighting a lack of understanding of air power. Although both arguments are dangerously counter-factual they do present an interesting and compelling argument, albeit the variable estimates of the duration of the town's resistance were, in no small part, due as much to reductions in per capita rationing as poor accountancy and hoarding.

The first attempts at aerial re-supply for Kut Al-Amara involved the dropping of newspapers, parcels and letters to Townshend's Headquarters on 31 January 1916⁶¹. There was nothing new in this, the dropping of messages from aeroplanes had been common since before the War, but it marks the first drop of any significance and the beginnings of an adaptation. By mid-February 1916, this activity had become commonplace, with aeroplanes regularly flying the 23½ miles from the forward aerodrome at Ora, near Shaikh Sa'ad, dropping loads as diverse as wireless parts, fishing nets, medicine, and money⁶². On 4 March 1916, No. 30 Squadron RFC personnel began experimenting with dropping a millstone weighing seventy pounds using a parachute specially designed by Sergeant John Stubbs; this represented a departure from the routine, and demonstrates the cumulative nature of learning in contact⁶³. The millstone was required to enable flour-milling within Kut Al-Amara, the town millstones having been taken by retreating Ottoman troops in September 1915, and was finally dropped from a Betuci aeroplane on 27 March 1916⁶⁴.

It is unclear who devised the idea of dropping food into Kut. Moberly states that the idea originated with Broke Smith and that it was disseminated through the new commander of IEF 'D', General Sir Percy Lake, however, in mid-April 1916 Broke Smith messaged Massy asking for details of the new innovation of which he had just been notified, which would seem to contradict Moberly's account⁶⁵. It seems likely that the idea probably originated in No. 30 Squadron RFC, this further reinforces the idea of the bottom-up nature of innovation being tied to shortage and necessity. The first experiments with the aerial delivery of food took place on the 11 April 1916 at Ora, with a workable mechanism being in place by 13 April 1916. Townshend granted permission to try the concept on the 14 April 1916, stating that Kut Al-Amara would require around 5,000 pounds of foodstuffs per day to hold out. The aerial re-supply effort commenced on 15 April 1916 and from then until the end of the siege a fortnight later, No. 30 Squadron RFC managed to supply 19,000 pounds of food, although only 16,800 pounds could be recovered by the besieged troops. Townshend would later describe the aerial re-supply effort as 'a complete failure'⁶⁶.

By April 1916, No. 30 Squadron RFC had nine aircraft available for duty at Ora: four Betucis, one Henri Farman Voisin, one Voisin and three Shorts seaplanes⁶⁷. Although all of these could be used for aerial re-supply duties, the vast majority of sorties were flown by the land aeroplanes largely because the seaplanes were relatively underpowered and had trouble rising and landing when burdened with a heavy load⁶⁸. Additionally, the different aeroplane types had to be loaded differently according to their flying characteristics, this in turn affected the maximum load carried: Betucis could carry a load of 150 pounds, the Henri Farman a load of 200 pounds, the Voisin a load of 150 pounds and the Shorts between 200-250 pounds⁶⁹. With the exception of the Betucis, all loads were mounted on a modified bomb rack designed by the OC of 'B' Flight, Captain E.M. Murray, with loads being dropped from an altitude of 5,000-6,000 feet⁷⁰. The Betucis carried a 50 pound load on the improvised bomb rack and a 50 pound loads on each lower plane alongside the pilot's seat⁷¹.

Molkentin states that the loads were dropped with the aid of parachutes, this is incorrect; whilst the millstone was dropped on 27 March 1916 using this method, all other loads were free-dropped⁷². In repeating the parachute myth from the secondary sources, Molkentin demonstrates the danger of depending, even in the smallest detail, on the work of others; he is unfortunately far from rare in this unfortunate, if understandable, mistake. Initially, loads for the Henri Farman and the Voisin were dropped in a four-gallon petrol drum but the experimentation phase discovered that the drums tended to burst on impact with the complete loss of the load. Instead, the loads were packed tightly into food sacks and then double-sacked inside a loosely tied sack to ensure that if the inner sack burst on impact, the contents would be contained in the outer sack. This was entirely successful and accounts from officers besieged in Kut Al-Amara describe watching the curious sight of the sacks falling end-over-end from the aeroplanes trailing a faint white cloud of flour⁷³. The bomb rack modification involved removing the bomb guides and fittings, and fitting a bar pivoted at one end, the other end being fastened by a quick release attachment operated by the pilot. The load was

carried in pairs of sacks fastened together and slung across the bar. The loads on the lower plane of the Betucis were attached by a cord passing around the bottom end of the rear spar; when over the target the pilot would cut the strings and pull the sacks over the trailing edge of the plane⁷⁴.

Notwithstanding issues with engines and the lifting of loads from the Tigris, aerial re-supply appears to have been more problematic for the RNAS than for the RFC. Anecdotal evidence from inside Kut Al-Amara is scathing regarding the ability of seaplanes to deliver the load to the marked dropping point, this criticism varies from humorous inter-Service banter to annoyance at the RNAS' reticence to modify their aeroplanes⁷⁵. Whilst these anecdotes are hard to ignore, it is clear that the seaplanes did more than their share of the workload. Although RNAS seaplanes represented less than a third of the flying strength of the Squadron, in the period 17 – 30 April 1916 they completed almost 40% of the flying hours flown⁷⁶. To a degree this is explained by the use of seaplanes on other tasks, specifically artillery support, but perhaps it was easier to criticise the more recognisable shape of a float-plane than a land-based aeroplane when supplies were lost.

Overall, in the period 15 – 29 April 1916, No. 30 Squadron RFC delivered 16,800 pounds of food into Kut Al-Amara which represented around 22% of the requirement⁷⁷. This raw data is deceptive, however, as it fails to recognise many of the factors which retarded the capability. On the first day of re-supply, for example, in clear skies and without serious opposition, the aeroplanes managed to deliver 3,750 pounds of food into Kut Al-Amara, representing 75% of requirement⁷⁸. This is contrasted with the second day of resupply when, in high winds, only 1,335 pounds was received into Kut Al-Amara, 26% of requirement⁷⁹. On average, aeroplanes delivered 1,600 pounds of food each day⁸⁰. It must be remembered, however, that prior to the start of the operation, it had been thought that the re-supply effort was feasible; this indicates that a number of variables were either unforeseen or not included in the planning. These variables can be summarised as the effect of high flying hours on old airframes and tired aircrew, competing operational demands on the air service, adverse weather and the unfavourable climate of Mesopotamia and, perhaps most importantly, the loss of air supremacy in the theatre.

The number of flying hours performed by the nine aeroplanes of No. 30 Squadron RFC rose from around 43 in the period 20 – 25 March 1916 to over 152 in the period 17 – 23 April 1916⁸¹. General Sir Percy Lake was well aware that the air service of IEF 'D' was operating with aeroplanes which 'were obsolete and in need of repair' and Massy had warned in February 1916 that, given the age and disrepair of the equipment and the enhanced servicing required, the workload demanded by the Tigris Column was unsustainable⁸². It is clear that by April 1916 this problem would likely have been even more apparent, indeed on 17 April 1916 no flying was possible because of issues with the maintenance of the aero-engines and all seaplanes were withdrawn from Theatre in May 1916 due to wear and exhaustion⁸³. The climate and insanitary conditions also took their toll on the aircrew; during the period of the re-supply

almost every pilot was hospitalised for a short period and No. 30 Squadron RFC's War Diary makes it clear that only six pilots were available for flying duties in the squadron during the week ending 23 April 1916⁸⁴.

In addition to a shortage of pilots and aeroplanes, and notwithstanding the importance of the aerial re-supply mission, the squadron was tasked with providing aerial reconnaissance and artillery observation for the Tigris Column. In the week of the 17 – 23 April 1916, the squadron carried out almost 34 hours of reconnaissance, 34 hours of aerial re-supply and over 48 hours of artillery co-operation⁸⁵. This continues a theme of a lack of understanding of the limitations of aviation by those in command and an inability to talk truth to power on behalf of Massy and Gordon. The ferocious climate of Mesopotamia also played a part in hindering the re-supply mission, on several occasions the squadron's aeroplanes were unable to fly because of high winds and poor weather conditions, notably on 18 April 1916 when stormy weather grounded all air activity⁸⁶.

Until February 1916 the British air services enjoyed complete air supremacy in Mesopotamia. This changed with the arrival of four German Pfalz monoplanes, which quickly achieved air superiority and began to bomb Kut Al-Amara from 13 February 1916⁸⁷. Despite this new arrival, the aerial re-supply effort was not seriously impaired by the German machines until 24 April 1916 when a German monoplane attacked one of the food carrying aeroplanes⁸⁸. The carrying of additional weight had necessitated the reduction of the crew of each aeroplane to the pilot only; the pilot was unable to fly and fight the aeroplane at the same time. The solution to this was to provide an escort armed with a Lewis gun for each food carrying aeroplane, however, the Pfalz was faster and more agile than the British escort aeroplanes which thus acted as only a limited deterrent and further reduced the number of aeroplanes and aircrew available for aerial re-supply missions⁸⁹. Although this defensive measure mirrors developments on the Western Front, given the doctrinal isolation of the Mesopotamian theatre it seems likely that any similarity is purely coincidental. Perhaps more than any other factor, the loss of air superiority made the aerial re-supply of Kut Al-Amara untenable⁹⁰.

Although the practical application of aerial re-supply had failed to provide sustainable relief to the garrison of Kut Al-Amara, the concept itself was sound and far from Townshend's 'complete failure'. No. 30 Squadron RFC had provided a considerable amount of food and other vital equipment which undoubtedly extended the resistance of the besieged Division and could, it is argued, have provided even more succour if a series of factors and unforeseen circumstances had been absent and if the effort had begun earlier. Michael Molkentin states that the operation was a failure because 'the vision outstripped the available technology', but this is only fair within the bounds of the Mesopotamian Theatre. It is argued that with more aeroplanes of a more modern type, better logistic provision and more aircrews, it is possible that the aerial re-supply of Kut Al-Amara could have been successful in practical as well as conceptual terms. Since the end of the Great War, historians have accepted the view that the aerial re-supply of Kut Al-Amara was a noble, but flawed, experiment. Instead, it should be

viewed as an innovative and audacious concept, which fell short in practical application due to a number of external factors, unrelated to the concept itself. It is further argued that the reason for the perception of aerial re-supply as a failure lies with a failure to promulgate the concept and the lack of a powerful patron to champion its cause. This would certainly not be the case when the concept was re-incarnated in France in July 1918.

Conclusion

In warfare the ability to innovate and adapt, to use technology to its optimum effect, is central to success on the battlefield. This can only be achieved, however, by understanding the innovation, learning its strengths and its weaknesses, exploiting its qualities and thus finding an effective way of using the innovation to gain a competitive advantage over the enemy. Technology of itself does not win wars, human understanding of that technology and exploitation of its characteristics are the critical factors to victory⁹¹. This study of aerial re-supply during the Mesopotamia Campaign has demonstrated that organisational maturity, a 'learning culture', and superiority of knowledge management are key to transformation in contact.

In the instance of the relief of Kut Al-Amara in April 1916, as has been demonstrated, a broad consensus of both popular and academic historians agree that aerial re-supply was both a conceptual and practical failure. A conceptual failure because, they argue, the available technology was insufficient to support the concept, and a practical failure because the capability ultimately failed to relieve the siege of the town and its garrison. Whilst it is fair to say that aerial re-supply did not successfully relieve Kut Al-Amara, it certainly extended resistance and, it is argued, were it not for circumstance, may well have produced a largely successful outcome. The traditional view of aerial re-supply, and indeed the wider aviation effort in Mesopotamia in 1915-16, is thus deserving of review; indeed, surely in terms of aerial re-supply, it should be viewed as a complete conceptual success and a limited practical success.

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Indefensible? A Reassessment of the Part Played by RAF Personnel in the Battle of Crete 1941

By Squadron Leader (Retd) David Stubbs

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Abstract: The German invasion of Crete in 1941 and subsequent loss of the airfield at Maleme led, almost immediately, to the acceptance of a narrative in London that suggested significant RAF failure. Criticism, reinforced by the New Zealand official history, bemoaned the lack of fighter aircraft cover and questioned the fighting prowess of RAF ground crew. This article examines the New Zealand commanders' errors of judgment, which resulted in inappropriate positioning of their soldiers to face the main thrust of the German attack, and argues that RAF airmen became convenient scapegoats for the failings of others. Further, Winston Churchill's motives in questioning the motivation, ability and willingness of airmen to defend airbases are analysed, as is the ensuing political maelstrom, which led to knee jerk reactions and unnecessary reorganisation of RAF ground defence training.

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Introduction

On 28 April 1941, only a day after German troops occupied Athens and British troops were beginning to evacuate the Greek mainland, the Prime Minister Winston Churchill received intelligence that a German assault of Crete would take place in May 1941. He anticipated 'a fine opportunity for killing the parachute troops' and directed that the 'island must be stubbornly defended'¹. Nine days later the topic of Greece and the Middle East would be debated in the House of Commons. It would conclude with a vote of confidence on Churchill's leadership which, if it had gone against him, would have required him to step down as Prime Minister. It is highly probable therefore that Churchill hoped a successful defence of Crete would put a stop to the apparently inexorable series of defeats suffered by the British Army when facing German opposition and would reinforce his grip on power.

At the time it was widely understood that any German airborne attack against Crete would have to be conducted without their superior tanks and heavy weapons, as their transport aircraft would be able to carry little in the way of logistics and mechanical transport². Put simply, the Germans would not have access to the advantages they enjoyed in earlier campaigns and, given the history of all arms warfare between British and German forces between 1940 and 1941, the loss of these advantages should have made a British victory more likely. Moreover, the aircraft of the German Air Force (GAF) would have to fly well over a hundred miles, much of it over the sea, to make attacks on the island and this would reduce their 'time over target' and, presumably, restrict their effectiveness. The parallels between the resistance in Great Britain in 1940 and the situation in Crete, as seen from the perspective of the War Cabinet, appeared strong, the only significant difference being the relative weakness, due to a lack of available first-rate fighter aircraft, of the RAF presence on the island and its consequent inability to deny the GAF control of the air.

Nevertheless, the RAF's known weakness in the region did not seem to worry Churchill or the Cabinet. On 29 April the War Cabinet signalled General Sir Archibald Wavell, Commander in Chief British Forces in the Middle East, with the Joint Intelligence Committee (JIC) estimate of the size of the GAF his forces on Crete were likely to face: 315 long-range bombers, 60 twin-engined fighters, 240 dive-bombers and 270 single-engined fighters. It also articulated the likely method of air attack³. Wavell was aghast at the assessment, which he thought likely to be incorrect and he will almost certainly have consulted Air Chief Marshal Sir Arthur Longmore, Air Officer Commander-in-Chief Middle East, before he challenged the provenance of the JIC's assessment, arguing that the JIC estimate probably included all of the opposing aircraft in the Balkans, Sicily and Libya. Wavell suggested his forces were more likely to face the 150 single-engined fighters and 40 twin-engined fighters in the Balkans⁴. Curiously, he chose not to mention the number of bombers, which indicates his, or perhaps Longmore's, understanding of the importance of the fight for control of the air. What was abundantly clear was that the available first-rate RAF fighters were vastly outnumbered. On 25 April the RAF on Crete had 7 Hurricanes and a mixed assortment of pilots from 33 Squadron and 80 Squadron. One of

the Hurricanes had an irreparable hole ten inches in diameter through the main spar of one wing but the pilots elected to take turns in flying it even though the potential for catastrophic collapse was very real⁵.

According to the official British historian for intelligence the first signs of German preparations for an airborne operation were received in the last week of March 1941. But knowledge of the German efforts to amass JU 52 transport aircraft and the likelihood of using them for multiple glider-towing operations, by positioning them in the Balkans, was not supported by evidence to indicate the target⁶. Indeed, the intelligence preceded the German invasion of Greece, which began on 6 April. In strategic terms Churchill considered Libya to be the dominant theatre of operations. So, although Churchill had been an ardent advocate of the defence of Crete on 18 April he ruled that, in the event that it was necessary to evacuate Greece, operations in Libya would take precedence over those on Crete⁷. The date, 18 April, is significant because on that day Wavell, who earlier suspected the intelligence had the hallmarks of a typical German deception plan⁸ learned that Crete was likely to be the target of airborne attack. Significantly, the War Office received intelligence on 29 April warning of a simultaneous airborne and seaborne attack on Crete, with the initial wave of parachutists, comprising 3,000 to 4,000 men, being delivered in the first sortie of a possible 3 sorties on the first day⁹.

Command and Judgement

It is clear that given the importance of denying Crete to the Germans the decision makers in London wanted the island to be commanded by a man they trusted. Messages from the Chiefs of Staff on 29 April and from the Chief of the Imperial General Staff, Sir Alan Brooke, on 30 April were explicit in suggesting that Major-General Bernhard Freyberg should take over from Major-General C. E. Weston¹⁰. Freyberg was a much-decorated officer who dined with, stayed with and was on first-name terms with Churchill. It is clear that he was Churchill's choice for the job¹¹. Wavell travelled to Crete, on 30 April, to appoint Freyberg as Commander of British Forces on the island and during his visit he told Freyberg about the Ultra secret¹². It is likely that he also related the assessment that anticipated a simultaneous air and sea attack against the island. The Official New Zealand History, however, suggests that Wavell disagreed with this assessment, thinking large-scale seaborne landings improbable¹³.

The intelligence assessment, however, tallied with the assessment made by General Wilson, the former Commander of British 'W Force' in Greece, who had been evacuated to Crete on 28 April. Wilson told Freyberg that it would not be difficult for the enemy to launch a seaborne attack on Crete, because the GAF, which dominated the skies, could protect it from the Royal Navy¹⁴. Indeed, the GAF's aerial domination over Greece strongly influenced Wilson's thinking. During his day on Crete Wavell was often reminded of the GAF's complete air superiority in Greece, even though, at the time, this superiority had not been seen over Crete. Actually, only one large-scale raid had been launched by the GAF on the afternoon of 29 April, when some 20 Ju88s approached Suda Bay to bomb the ships in the harbour. The raid was detected by RAF radar and all 6 available Hurricane fighters were scrambled, as were some 805 Squadron

Fulmar aircraft and the single Sea Gladiator. One Ju88 was claimed shot down but German records show no losses that day¹⁵.

Before Wavell gave Freyberg Command of Crete he praised the performance of the New Zealand division in the recent fighting and during the evacuation from Greece¹⁶. Freyberg certainly epitomised the brave and aggressive type of leader Churchill preferred. Yet, soon after the level of responsibility entrusted to him sank in Freyberg began to have doubts about the ability of his forces to resist the impending attack. Within 24 hours he signalled Wavell and the New Zealand Prime Minister, Peter Fraser, to claim that the forces at his disposal, particularly RAF forces, were 'totally inadequate to meet envisaged attack'¹⁷. Yet, his resolve began to stiffen less than 4 days later, after he was given reassurances from Wavell that the appreciation of German strength was likely to be exaggerated and that it was doubtful whether there would be time for an evacuation before the attack came¹⁸. His indoctrination into the Ultra secret may also have helped bolster his confidence.

Certainly, around this time, Freyberg told Group Captain George Beamish, the Senior Air Force Officer (SAFO) on Crete that he had every confidence in the ability of the land forces to hold the aerodromes¹⁹. He also signalled Churchill to say that he was 'not in the least anxious about airborne attack, have made my dispositions and feel can cope adequately with the troops at my disposal' and that while Royal Navy support would be essential to thwart any seaborne attack 'with a few extra fighter aircraft, it should be possible to hold Crete'²⁰. By 10 May the situation in Crete appeared much improved; the defences had been reinforced by the arrival of artillery and additional equipment was on its way. Wavell expressed his 'full confidence' in Freyberg and his troops when signalling the War Office²¹. Freyberg signalled Wavell on 16 May, having just returned from a tour of the defences, saying that 'he did not wish to be overconfident, but I feel that we will give excellent account of ourselves. With the help of the Royal Navy I trust Crete will be held'²². The idea that the successful defence of Crete was conditional on significantly increased RAF fighter support had disappeared from the narrative. Certainly, at the time, Churchill was convinced that, in spite of the lack of air support, there was a good chance of winning the forthcoming battle²³.

So, less than two weeks before the assault was scheduled to take place, and with full knowledge of the size of the GAF threatening the island, the idea that a significantly larger force of first-rate RAF fighter aircraft was necessary to repel the invasion was not what the commander on the ground was thinking or, indeed, reporting to his command chain or his friend, the British Prime Minister. Only after the defeat did the narrative change. The Inter-Services Report on Crete, written soon after the defeat, in a period of high tension characterised by inter-Service muck slinging suggested 'that at least six fighter squadrons were needed' and that 'it is doubtful whether they would have been enough'²⁴. This narrative was perpetuated in the official New Zealand history, published in 1953, written by an officer who experienced the campaign first hand. It also argued that 'one shortage above all was conspicuous to the defenders, that of aircraft'.

The Blame Game

What is clear is that after the defeat in Crete the blame game began almost immediately and the main focus of criticism was directed towards the RAF, mostly because of the lack of fighter aircraft cover. Air defence, something previously considered to be of only marginal importance to the outcome of the battle, was now deemed to be the most significant factor in the defeat and generalised perceptions about the fighting prowess of RAF personnel on the ground added to the feeling that the RAF had let everyone down. Essentially, much of the animosity had carried over from the evacuation of Greece a month earlier. While Dominion troops often measured themselves against the English, usually judging them inferior²⁵, the antipathy was often exemplified by a simplistic dislike of those wearing a different uniform. In one instance a party of Australians, who had made a heroic escape by rowing from Greece to Crete, brought with them a precious cargo: four sacks of mail, and mail was well-known to play a crucial role in determining morale²⁶. When they discovered that three of the four sacks turned out to be for the RAF, they dumped them in the sea²⁷.

So, when on 3 June 1941 Wavell circulated a signal that described the defeat of Crete as attributable to a lack of air support²⁸, he was merely reiterating the general perception of soldiers about the utility of the RAF and, by implication, the performance of the airmen in ground fighting on the island. The consequences of these feelings, however, generated a toxic atmosphere between the two Services, which resulted in a number of fights breaking out between the large numbers of soldiers evacuated to Alexandria and RAF personnel located there²⁹. Wavell was eventually forced to act to stamp out such behaviour³⁰ but the feeling that defeat would not have been inevitable had the RAF had played a fuller part in the battle was widespread, and it persisted³¹. The Inter Services Report on Crete was chaired by guardsman Brigadier-General A. (Guy) Salisbury-Jones, although it was composed of RAF and RN members too. The resultant report concluded that:

The major lesson of this campaign was that to defend with a relatively small force an island as large as Crete, lying under permanent domination of enemy fighter aircraft and out of range of our own, was impossible, .. *that* ..The Royal Air Force cannot claim to have shown greater foresight or energy than the Army.. *and that* ..The Committee are of the opinion that until the eleventh hour no Service gave due weight to the preponderating factor affecting this problem, which was the overwhelming superiority of the German Air Force³².

The distribution of these hastily produced lessons identified ensured that the earlier belief that the defence of the island *had been* tenable without substantial RAF support disappeared from the narrative and subsequent accounts of the battle began to suggest that the defence of Crete had never been considered viable without a significant amount of supporting air defence fighter aircraft. Moreover, in this context the decision to keep RAF ground crew on the island looked, at best, a flawed plan and, at worst, an idea based on wholly wishful thinking. However, the idea that in early May everyone agreed that the island's defence *was* conditional

on a significantly increased RAF fighter presence does not tally with what Freyberg was saying and reporting when the decision to keep the RAF ground crew on the island was made. The tendency to blame RAF personnel for what went wrong in the ensuing battle is, therefore, worthy of particular scrutiny.

When writing about Crete, soldier historians, including Anthony Beevor and Major James Bliss are apt to lace their interpretation of events with soldiers' derisive epithets about the RAF. For example, Beevor told his readers that the RAF was known to New Zealanders as 'Rare as Fairies' and to the Royal Navy (RN) as 'Royal Advertising Federation'³³. Bliss, a New Zealander, and an ardent supporter of Freyberg's conduct of the battle, went as far as describing the RAF as 'absent from the battle'³⁴. However, Beevor's use of selected anecdotes is particularly unbalanced and one-sided: disparaging anecdotes by airmen, though relatively hard to find, or by civilians about soldiers are almost entirely absent in his version of events. John Ferris has questioned the validity of writing history through anecdotes, describing the technique as typical of the 'Bloomsbury syndrome': where the marked preference for anecdote over analysis threatens to diminish the integrity of the conclusions made³⁵. Interestingly, the Bartholomew report, written after the defeat in France and subsequent evacuation, drew the main body of its evidence from soldiers. The report insisted that 'man for man the Britain was better than the German'³⁶ but the tendency for the British Expeditionary Force (BEF) to evacuate by sea following contact with the German army had not escaped the public's attention. To many civilians the BEF stood for 'Back Every Friday'³⁷. So, to provide a more balanced account of the events on Crete, this paper will concentrate on an analysis of the facts, based on the evidence, rather than through the selective use of anecdotes by the supporters of one Service against another.

In taking the first step to add some balance to the current historiography it is important to see how the considerable knowledge about enemy intentions, derived through Ultra intelligence, influenced Freyberg and his commanders to position their forces. Barely a month after the defeat Wavell wrote to the War Office, summarising the way Freyberg positioned his forces:

Our troops were disposed in three groups. The main group held from Maleme Aerodrome, about ten miles west of Canea, to Suda Bay. The second was at Retimo and the third at Heraklion. The general composition of these groups was given in my 0/67416 of 25 May³⁸.

On first impression Freyberg's plan, described by Wavell above, to deploy the main body of forces on, or very near to the 3 airfields, the known targets, was logical but the actual disposition of forces was subtly different. Freyberg's Operation Instruction number 10, issued on 3 May, described four sectors and four commanders, rather than the three groups described above, though the omission of the Suda Bay Sector in Wavell's message was reflected in earlier reports. Major-General Weston, the man who had been Commander of Crete but was relieved

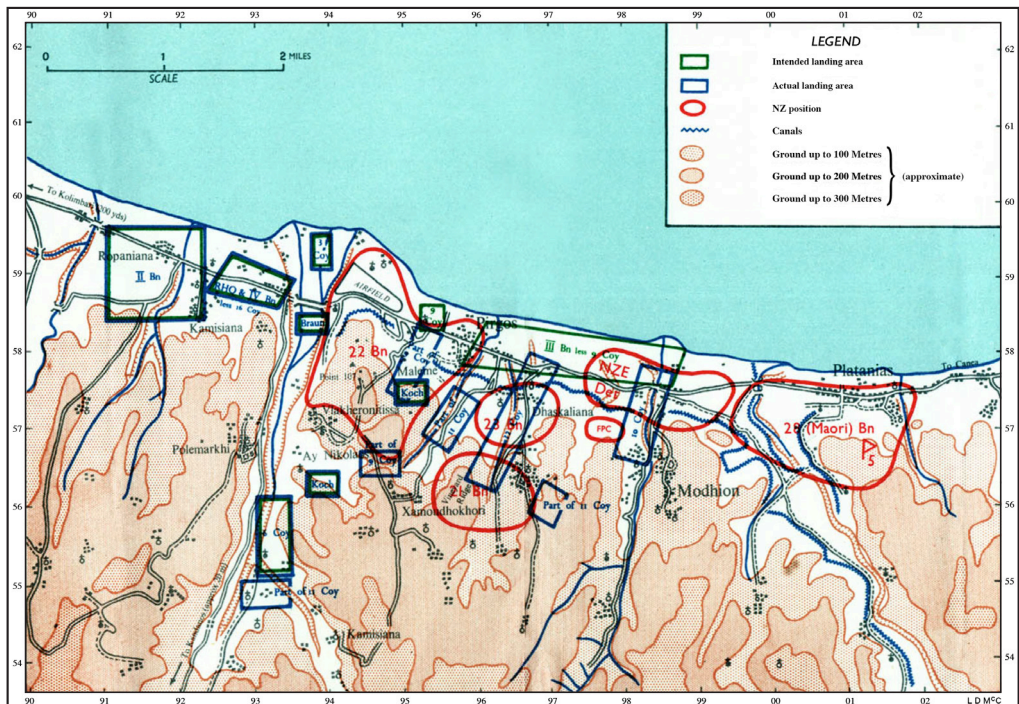
by Freyberg, was given command of the forces around the Suda Bay area. New Zealander Brigadier Edward Puttick commanded the Maleme sector, but his command did not stretch to Suda Bay, so he had the option to position his forces in denser concentrations closer to Maleme enabling them to engage, through counter attacks, any German forces trying to establish a foothold on the airfield. Indeed, on 3 May Freyberg directed Puttick to adjust the disposition of Brigadier James Hargest's 5th NZ Bde, to strengthen the airfield defences so that they could provide mutual support between battalions for counter attacks³⁹. However, no significant changes were made in the subsequent 17 days, before the assault began on 20 May.

The analysis in the appreciation, which formed part of Freyberg's 3rd May Operation Instruction, drew heavily on the information provided by Ultra⁴⁰ and at the time it is likely that subordinates would have thought their commander incredibly perceptive about the targets and the likely method of assault. Freyberg had a force of 42,547, comprising 15,063 troops from the British Army; 10,258 Greek soldiers; 7,702 New Zealand soldiers; 6,540 Australian soldiers; 2,366 sailors/Royal Marines and 618 officers and airmen from the Royal Air Force⁴¹. The overall number and disposition of the fighting men on Crete is important because the data shows that less than 1.5% of the island's defenders were RAF servicemen, and these were distributed between the three airfields at Maleme, Reythmo and Heraklion. Indeed, only after delving deeper into the detail of the numbers does the wider picture emerge. The Maleme Sector was defended by the 7,702 New Zealand troops; its 5th Brigade was specifically charged with the defence of Maleme airfield. Most of the 6,540 Australians were responsible for defending Retimo (Reythmo) Sector and most of the 15,063 troops of the British 14th Brigade were deployed around Heraklion Sector⁴². The Suda Bay Sector included the Royal Marines Naval Base Defence Organisation and was protected by the majority of the 2,366 Royal Marines with the 1st Welch and an Australian battalion. Surprisingly, given the apparently perceptive analysis of Freyberg's appreciation, less than one tenth of the available New Zealanders were positioned for the immediate defence of the airfield it was charged to defend.

Of the 989 personnel defending the airfield at Maleme only 620 were New Zealanders, from the 22nd Battalion of the 5th NZ Brigade. The others include 229 RAF personnel, mostly ground crew from 30 and 33 Squadrons and 85 Royal Marines, together with 55 personnel from the Fleet Air Arm⁴³. Significantly, given Ultra identified Maleme as one of primary targets, RAF personnel comprised some 23% of the defenders! The other 7,082 New Zealanders defending the sector had been positioned to the south and east of the airfield. All non-essential RAF personnel had been withdrawn from the island by 9 May. Those left on the island were responsible for maintaining the twenty-four remaining aircraft at Maleme and the twelve at Heraklion and were to provide the 'seed corn' for RAF expansion once the assault had been repulsed⁴⁴. Naturally, given the air defence role of these aircraft RAF personnel remained under RAF command, yet New Zealander Lieutenant-Colonel Leslie Wilton Andrew V.C., whose primary job as Commanding Officer of 22 Battalion was the 'static defence' of the airfield⁴⁵, began to worry about the unity of action in such defence and, in particular, the positioning of the anti-aircraft guns, which he felt were unduly exposed.

The official New Zealand historian thought it highly likely that Puttick or his commanders recognised that the ground west of the Tavronitis river (a likely assembly area for the invaders), was too lightly defended, but Puttick claimed he did not have enough troops to spare for the task⁴⁶. Given the direction Puttick had received from Freyberg on 3 May the idea that the troops he had at his disposal would be better employed elsewhere was an odd conclusion to draw; particularly given his understanding that the area he chose not to defend had been identified as one of the main points of the forthcoming enemy attack. The ad hoc and uncertain nature of the communications between units was well-understood and by positioning his troops some way apart he was increasing the likelihood that some units would miss important messages and therefore be unaware of the necessity to take part in counter attacks. His decision should also be seen in the context of the reports distributed by CREFORCE headquarters, which recommended swift counter-attacks and stressed the importance of parachute troops being rounded up on the aerodromes before the arrival of their airborne supports⁴⁷. Clearly, in this context, given the time delays in organising counter-attacks on the airfield, more troops from the 21st and 23rd Battalions should have been deployed closer to the airfield to supplement the 620 New Zealanders from the 22nd Battalion around Maleme airfield.

On 10 May Wavell advised the War Office that he was sending Army and RAF staff officers to Crete to discuss the Defence Plan⁴⁸. The Army officer who arrived on 11 May was Eric Dorman-



MALEME, Intended and Actual Landing Areas of Assault Regiment, 20 May

Smith, a man notorious for questioning the thinking of others. Dorman-Smith was sent to assess Freyberg's state of mind as well as to take him the latest intelligence picture. After their meeting Dorman-Smith added Freyberg to a category of officers he called 'Bear of Little Brain' as far as tactical sense went⁴⁹. Yet, in defending the disposition of the New Zealand soldiers, James Bliss notes that, on 11 May, Freyberg had been told that twelve ships, carrying 27,000 tons of equipment had left Naples. On 13 May Ultra message OL 2/302 provided an extensively detailed list of the attacking force, in which the tenth paragraph said 12,000 of the attackers would land by parachute and 10,000 would be transported by sea. On 18 May another Ultra message had revealed that the convoy had departed Piraeus for Crete⁵⁰. Bliss argues that the threats from the sea merited less concentrated defensive positions around the airfields; but given the airfields were known to be the primary targets it would have been reasonable to assume that 4,000 para troops would be dropped on, or very near to, each airfield. Consequently, the RAF personnel, whose camp was located close to the airfield, adjacent to the eastern bank of the Tavronitis River, adjacent to where the German attackers were likely to concentrate, became the focus of attention when questions were raised about the failure to oppose, counter-attack and round up the attackers.

RAF ground crew- Proactive in Defence

When the invasion began the British and Australian Sector commanders quickly recognised the necessity of committing their reserves in the early stages of the battle, and almost annihilated the attackers⁵¹ but, in contrast to their dynamic response, the New Zealand commanders procrastinated. The earlier misjudgement in deciding not to position more troops close to the airfield, together with the failure to commit the reserves to the battle at the earliest opportunity helps to explain why the performance of the RAF personnel at Maleme came under so much scrutiny. It appears that it became important to protect the reputation of the New Zealand commanders at the expense of the reputation of the RAF officers and airmen at Maleme. In this context the Official New Zealand history of the battle of Crete appears particularly partial. While it remarked positively about the odds faced by the pilots of the relatively few fighter aircraft the RAF were able to commit to the battle, until the last few serviceable aircraft were withdrawn on 19 May, it described the RAF crews and ground staff as 'very tired' and 'in low spirits'⁵². Beevor continued the theme in his book, describing how the RAF ground crew appeared to be 'dispirited', had a 'slightly anti-military insouciance', and that they 'did not bother to take their rifles with them' on the morning of the assault on 20 May, and 'did not even look up when the troop carriers thundered overhead in threes discharging their loads'⁵³. If we take these comments as reflecting widespread reality it would be reasonable to conclude that RAF personnel as a whole are likely to have performed very badly. Clearly, that is the impression such comments were designed to create. Indeed, the myth that RAF personnel were ill prepared to defend Maleme, and therefore responsible for the loss of Crete has been repeated to a variety of audiences as reality⁵⁴.

Certainly, RAF culture and attitudes evolved differently to those in the British Army, but by 1941, as Jeremy Crang has shown⁵⁵, a more egalitarian atmosphere prevailed. Even amongst

army commanders it became necessary for officers to engender a spirit of cooperation, using persuasion as well as their power and authority to get soldiers to do their bidding. What is clear is that RAF personnel took pride in a lack of formality, preferring to champion their professional competence and decry traditional military discipline. The RAF's structures of command were not based on the same rigid distinctions between officers and other ranks as in the Army⁵⁶. In this context displaying an 'anti-military insouciance' was typical of the way the RAF did business; it did not reflect low spirits, quite the opposite.

Of course it is important to realise that many of the RAF personnel on Crete had been fighting with their squadrons in Greece since December 1940, five months before the British Army had arrived there and they had also been evacuated to Crete after a perilous journey through southern Greece. Indeed, Beamish's post defeat report on Crete, together with Marcel Gerard Comeau's first-hand account of the island's fall, written from the notes he took for his daily diary, suggest that RAF ground crews were busy, proactive and generally in good spirits. Moreover, as Beevor noted, most of the Royal Perivolian Greeks, gunners and rear echelon soldiers, such as fitters and drivers, had never received any infantry training, so, in this context, the idea that RAF personnel were somehow delinquent because of their unfamiliarity with small arms training⁵⁷ is a most unfair criticism.

Beamish's airmen had set about building aircraft pens at Heraklion and Maleme to protect the fighter aircraft they anticipated would arrive in Crete once the airborne assault had been repelled. At Maleme this required the airmen to excavate into the shallow hill ledge on the south side of the aerodrome, which gave the GAF very little time to locate the pens and made them a difficult target to attack. The construction of each pen, which took four to six days, was interrupted by repeated air attacks. Nevertheless, four pens were ready by 20 May, and a further six were under construction⁵⁸. Beamish and Weston were both proactive in visiting the RAF's 252 Air Ministry Experimental Station (AMES), located at Xamodochori, on a high-ridge a couple of miles south of Maleme. The aim of these visits was to assess how the radar plots generated could provide Weston's operations centre with information necessary to give warnings of impending attacks to the island's defenders. The men even sought to integrate the radar plots produced by a portable Royal Navy radar set taken from HMS York after it was sunk in Suda Bay. The set was positioned on the Akrotiri peninsula⁵⁹ until it was destroyed by GAF bombing on 4 May.

Moreover, the reason some airmen 'did not bother to take their rifles with them' has been relatively easy to deconstruct. On 26 April a Most Secret Most Immediate signal from SAFO Crete ordered that aerodrome defence posts were to be fully manned and that all RAF personnel were to carry arms⁶⁰. So, why did some RAF personnel leave their weapons behind when they went to breakfast, after the first strafing attack from German aircraft on 20 May? The attacks on 19 May had been so intense that the airmen had been moved, as a precaution, to within the boundaries of the New Zealand defences on the northern slopes of Kavkazia Hill, otherwise known as Hill 107. Beamish had agreed the defence and communication

arrangements with the Army Commanders⁶¹, and some RAF airmen had, on their own initiative, concocted defences, using machine-guns taken out of wrecked aircraft. What happened subsequently goes some way to mitigate the airmen from blame for leaving their rifles in their new defensive positions and exonerates Weston from blame entirely. Essentially, there was a significant delay in passing the warning of the second assault wave on 20 May after it had been detected by radar. Beevor blamed this delay on Weston, citing what he describes as his ineffectual communications arrangements at his air defence centre at Suda Bay⁶².

The previous day a New Zealand sergeant had instructed the airmen, on and around Hill 107, on their defensive responsibilities and identified each man's defensive arc of fire. On 20 May the airmen were ready and waiting in position, though the weapons they had were of varying quality. The now routine early morning strafe attack on the airfield, known as the 'daily hate', began and lasted around 30 minutes, ending at around 0730. Soon after, the same sergeant who had instructed the airmen the day before went from trench to trench telling everybody to stand down and that 'If Jerry was coming, he'd have been here by now?'⁶³ After that assurance some of the airmen went off to breakfast, leaving their rifles behind, as did many soldiers⁶⁴. Weston's Operations Centre gave no warning about the second assault wave of German aircraft, even though the 252 AMES radar site had detected the attackers. The reason for the delay in passing the message was because a bomb had broken the single telephone line, linking 252 AMES with the Operations Centre, during the first raid that morning. Something similar had happened with 220 AMES, at Heraklion, on 15 May, requiring the unit to use Morse code, the secondary communications method, to pass the information on the plots⁶⁵. So, when the same thing happened, on 20 May, 252 AMES followed the protocol and began to transmit the plots by Morse code to HQ RAF Crete. However, the time delay in sending and decoding the Morse code messages meant the warning did not reach the defenders at Maleme in sufficient time for them to be in position to repel the assault⁶⁶. Interestingly, the Germans intercepted these Morse code transmissions, warning of the invasion armada, and assumed that British patrol boats in the Aegean were sending the warnings as part of a bespoke aircraft reporting system⁶⁷. RAF airman 'Ginger' Stone, however, was ready and waiting. He had concocted a defensive position, albeit without sandbags, trench or other protection, and when the attack came later that morning he continued to fire his adapted machine gun after the Bofors anti-aircraft guns had been silenced⁶⁸.

As for Beevor's charge that some RAF personnel did not look up when the troop carriers were discharging their loads, it is worth noting that there are similar anecdotes about some New Zealanders and some Royal Marines. Comeau, for example, found six New Zealanders in a trench, still sheltering with their 'heads down' and blissfully unaware that the gliders were landing. Shortly afterwards, he found two Royal Marines playing dead in the hope that the Germans might not kill them, only take them prisoner⁶⁹. Meanwhile, Comeau carried on fighting, using any weapons that came to hand. A few RAF airmen, holding a trench near the Tavronitis River, the area Puttick claimed he had too few troops to protect, also carried on fighting, without relief, until they ran out of ammunition. Nevertheless, the enduring

implication of the writing in the Official New Zealand narrative is that while some of the FAA, RAF and RM personnel, particularly those led by Pilot Officer Crowther, 'did do some fighting' the remainder were either in the way of the New Zealanders, failed to do as they had previously agreed, or were a burden on defence⁷⁰. This was a very harsh judgement as many airmen were anything but a burden on defence. One airman was later awarded an OBE; two (one being Comeau) were awarded Military Medals; another was awarded the MBE; two were awarded BEMs and another was mentioned in dispatches⁷¹.

Events around 252 AMES radar site

As Andrew had feared, most of the Bofors anti-aircraft guns, manned by the Royal Marines had been silenced before the main assault took place⁷². Andrew must have been irritated to learn of the refusal to use the 4-inch guns on Hill 107, and the 6-inch coastal gun battery on St. John's Hill against the glider force and German troops on the airfield so they could be used against a seaborne threat yet to emerge. At 252 AMES Lieutenant Wadey, from HQ Coy, 22nd Battalion, took over command as Officer i/c Defence and his platoon took a high toll of the German gliders as they made their way towards Maleme⁷³. Behind the radar station, to the south, German parachute troops were dislodged by concentrated fire from the station's two machine guns before, at around dusk, a patrol from the New Zealand 21st Battalion reported the area cleared, apart from isolated parachutists. Later still a Maori Battalion, from 28th Battalion, moving west towards Maleme, advised Flying Officer Britton that they were on their way to relieve the troops on the aerodrome but the troops were not relieved and the Maoris did not position themselves to counter attack the next day. Instead, later that evening, they retraced their steps to the east.

The next morning Britton learned that during the night the whole 21st Battalion and HQ 22nd Battalion had retreated from the aerodrome to the north-east of the station. Andrew had sent runners to the New Zealand Companies and HQ Company to warn of this move, but not to 252 AMES. That said, none of the runners got through⁷⁴. When it was clear that the Germans had taken the airfield the AMES detachment, together with the New Zealand troops were directed to head east to Canea, if possible, but doubt as to whether the road to Canea was open, which it wasn't, encouraged the Commanding Officer Flight Lieutenant Babcock to keep the unit in its defensive position. As no orders had been received from Andrew, it was decided to destroy the technical equipment and dispatch Lieutenant Wadey to seek direction whether to withdraw or, with reinforcements, try to hold the position. Andrew directed that they should stay put and hold out for as long as possible. Soon after this decision had been made the station came under concentrated heavy bombing and machine gun attack, lasting around 45 minutes, which wiped out two of the gun posts, killed several of the personnel and wounded Wadey. As soon as darkness provided cover the station was evacuated and the airmen made their way via Dere, Genina and Suya, Ayer Rumeli, and eventually Sphakia, where on 28 May at 0200 they were evacuated to Alexandria, Egypt⁷⁵. Of the RAF's 618 personnel on Crete when the German assault began 71 were killed and 235 were either wounded, or wounded and taken prisoner⁷⁶.

How London saw things

While the behaviour of personnel under fire is often a matter of conjecture the important aspect here is that a narrative, suggesting RAF failure, made its way to London. Somehow, the idea that indolence, fatigue and inertia amongst RAF personnel had been a key feature in the loss of Maleme was allowed to fester. Yet Churchill did not meet any of the senior RAF commanders involved in the battle of Crete to seek their counsel on this topic. The Secretary of State for Air, Sir Archibald Sinclair, had relieved Air Chief Marshal Sir Arthur Longmore, Air Officer Commander-in-Chief Middle East, of his command the day before the attack on Crete began and had replaced him with Tedder⁷⁷. Longmore had a long history of complaining about the lack of first-rate fighter aircraft reaching his command.

After surviving the vote of confidence over the defeat and evacuation from Greece, on 7 May, Churchill may have worried how the loss of Crete would affect his position as Prime Minister but when the House of Commons debated Crete on 10 June Churchill's leadership, oversight and involvement in the decisions affecting the events on Crete was never seriously questioned⁷⁸. Former lawyer Brigadier Lindsay Merritt Inglis, commander of the 4th New Zealand Infantry Brigade, went to London and met Sir Alan Brooke, Chief of the Imperial General Staff (CIGS), on 12 Jun, where his comments on the 'German method of attack' were adjudged useful⁷⁹. They were deemed so interesting that the next day he was given an audience with Churchill, where he suggested that Freyberg had been reticent about undertaking counter attacks for fear of seaborne invasion⁸⁰. The next day Churchill sent a memo to the Chiefs of Staff. It questioned Freyberg's tactical conduct of the defence of Crete⁸¹. Clearly, representations to Churchill gained immediate traction.

Colonel Robert Laycock also visited Churchill. He had been in charge of the Commandos on Crete and, according to Beevor, had extracted himself from surrender and capture by delegating, at the last minute, the task to a Lieutenant, George Young, who though not a member of the 'White's Club gang', was, according to Beevor, a natural choice for the onerous duty. Laycock, was another of Churchill's favourites; they lunched together at Chequers, where Laycock suggested that 'a dozen tanks could have saved Crete', something Churchill is likely to have been more than willing to believe.

Yet another of Churchill's favourites, Captain Louis Mountbatten, visited him on 21 June. On 23 May, Mountbatten, the Captain of HMS Kelly, had responded to a 4 am request by Freyberg to shell Maleme airfield. Mountbatten had gambled that the GAF, which generally only flew in daylight, would not catch him if his ship was heading south shortly after first light, but this gamble failed and his ship was sunk by GAF dive-bombers, around 8 am, south of Crete⁸². Mountbatten blamed the RAF for its inability to provide air cover for his ship and spent some time in Cairo telling everyone in Middle East Command as well as Sir Miles Lampson, the British Ambassador, how the RAF had neglected its responsibilities⁸³. Lampson signalled London, supporting Mountbatten's charges. Air Marshal Arthur Tedder, in Cairo, was warned of the brewing storm and met with both Lampson and Mountbatten to assuage their concerns.

Lampson was amenable but Mountbatten had deduced that the Army should have an air force, under its own control, for close support⁸⁴. Lampson noted how Mountbatten 'being who he is he has access to everyone and is not in the least afraid of our good Prime Minister or anyone else'⁸⁵. No doubt his circuitous route back to England, by air, frustrated him further; he left Cairo on 1 June but only arrived 14 days later. Mountbatten met Churchill and Beaverbrook on 21 June and Brooke 4 days later⁸⁶.

Knee-jerk Reactions

Churchill's interest in the performance of the RAF personnel on Crete had been aroused and soon after, when hosting Air Marshal Sir William Sholto Douglas at Chequers, the two discussed the vulnerability of RAF aerodromes in Britain and how an attack by parachutists should be handled. Churchill was clearly in a funk over the topic and the next morning when returning to London, with Douglas beside him in the car, he raised the subject again, before apparently, on the spur of the moment, directing the driver to RAF Northolt where, at the Headquarters building, he set off the parachute raid alarm so that he could watch the airmen's response. What he witnessed he found unconvincing and with his temper worsening by the minute he walked, again with Douglas, to the Polish fighter squadron. Again it appeared clear to Churchill that the alarm was not being taken seriously. By the time Churchill entered the squadron building he saw the pilots were sitting, reading, smoking; some were even playing cards. Churchill, now incandescent with rage, demanded the Squadron Commander explain to him why no action was being taken with regard to the parachute attack, but the answer he received innocently ridiculed the idea that their behaviour should have been any different. 'We know it's a false alarm. If it were not we'd have been ordered in the air by now'⁸⁷.

Of course, the Squadron Commander was right, a massed attack by German aircraft, including transport planes filled with parachute troops would have been quickly detected by radar and, given the extremely perilous nature of such an operation witnessed by the Germans in Crete, any such attack would have met the full force of the RAF's integrated air defence system and would have suffered great losses. But, in June 1940 Churchill had become fascinated by the idea of parachute troops and the defeat in Crete had reinvigorated his fears in this regard⁸⁸. It transpired that, after Crete, no one was willing to challenge his worries about parachute troops in the War Cabinet. Brooke, as CIGS, was normally the man to reign in some of Churchill's odd or mad ideas, but on this topic he was noticeably silent. Instead, a consensus emerged about what had happened in Crete. The groupthink stymied rational thought and empowered Churchill sufficiently to mobilise the machinery of government and the Chiefs of Staff to address the topic of defence against parachute troops in a way that was out of all proportion to the real threat. Brooke suggested an exercise with parachutists 'attacking' London. For a while his idea was taken seriously until common sense prevailed when Lord Beaverbrook pointed out a number of weaknesses underpinning the whole concept, not the least of which was the impression such an exercise might have on the general public. Clement Atlee backed Beaverbrook and the idea of holding the exercise disappeared from the agenda, much to the chagrin of Brooke⁸⁹.

Nevertheless, the obsession with attacks by parachute troops and the formulation of thinking to respond to the threat persisted. Churchill's opinion of what had happened in Crete, together with his experience at RAF Northolt, go some way to explaining his tirade against the fortitude of RAF ground crew in his memorandum, of 29 June, to the Secretary of State for Air and Chief of the Air Staff:

1. Further to my minute of June 20, about the responsibility of the Air Force for the local and static defence of aerodromes. Every man in Air Force uniform ought to be armed with something - a rifle, a tommy-gun, a pistol, a pike or a mace; and every one, without exception, should do at least one hour's drill and practice every day. Every airman should have his place in the defence scheme. ... It must be understood by all ranks that they are expected to fight and die in defence of their airfields...
2. ... Here is the chance for this great mass to add a fighting quality to the necessary services they perform. Every airfield should be a stronghold of fighting air-groundmen, and not the abode of uniformed civilians in the prime of life protected by detachments of soldiers.
3. In order that I may study this matter in detail let me have the exact field state of Northolt aerodrome, showing every class of airman, the work he does, the weapons he has, and his part in the scheme of defence⁹⁰.

Churchill already knew enough, from intelligence, to suggest that the Germans were about to make war against the Soviet Union, Operation Barbarossa⁹¹, so the idea that the Germans would undertake a concurrent large-scale airborne operation against Great Britain should have been quickly put to bed. Unfortunately, neither the Secretary of State for Air, nor the Chief of Air Staff, Air Chief Marshal Sir Charles Portal, were willing, or able, to put Churchill right, with arguments as clear and lucid as those of the Squadron Commander at RAF Northolt.

Only a month earlier the RAF had considered how best to defend RAF aerodromes against airborne troops⁹². The report noted that at the average main Fighter station, south of a line from the Wash to the Severn, some '200 to 300 rifle-trained airmen, drawn from ordinary station personnel' had an 'allotted role in the station defence scheme in an emergency' and detailed the anti-aircraft and ground-to-ground defence equipment. Nevertheless, in tandem with the atmosphere of hyperbole, the associated minute sheet estimated that in a single sortie 16,500 German troops could be transported by aircraft and gliders. This, according to the Director of Intelligence (Operations) (D of I (O)), threatened 66 aerodromes with assault by 250 trained and well-armed men if the landings were made at, or just before dawn, when not many of the transport aircraft and gliders would be intercepted en-route, although he did acknowledge that some of the transport aircraft might be shot down while attempting to return for another load. Moreover, the D of I (O) did not think such an attack inconceivable if the Germans were convinced that they had some chance of immobilising the bulk of the RAF

for a short period, even though he assessed that this form of attack would not be made unless it was part of a plan to invade which, for a variety of reasons, he considered improbable⁹³. After reading the assessment on 12 April, Air Chief Marshal Sir Wilfrid R. Freeman, then Vice-Chief of the Air Staff, passed it on to Air Vice-Marshal Arthur T. Harris, Deputy Chief of the Air Staff for comment. Harris worried that:

Defences are in the hands of young soldiers, untrained oafs short of weapons and with no skill in using them. Meanwhile our Bofors, Hispanos and PACs have been looted by the Admiralty. The Army don't care.Until we have our Bofors back and have at least 2 tanks per station and the RAF are trained with Tommy Guns we shall never be secure⁹⁴.

Yet, little over a month later the disastrously high German losses on Crete had led Hitler to tell General Student that '[T]he day of parachute troops is over'⁹⁵. The British, in stark contrast, had concluded the exact opposite. Churchill managed to divert attention away from his part in choosing the commander who had misread the intelligence by getting those around him to focus on anti-invasion planning, the thinking of which was permeated by the false, yet widespread, perception that the RAF had somehow failed in their duty on Crete. Surprisingly, Portal was in full agreement with this interpretation of events and wrote to all RAF Commanders-in-Chief at Home and the Air Officer Commanding, Northern Ireland, using much of the same caustic language used by Churchill, to lend his full support to initiatives which sought to stiffen the resolve of the airmen under their command⁹⁶. Portal was similarly persuaded that 'the use of airborne troops to attack and destroy aerodromes far behind the land battle is a new development of war and demands new methods of defence'⁹⁷. Consequently, a conference was convened on 3 July, chaired by Air Marshal Peck, to consider how best to implement these instructions⁹⁸. The very high losses of the Ju52 aircraft on Crete were obvious, as the Photo Reconnaissance pictures clearly indicated. Knowledge of the very high casualties inflicted on the parachute troops was also widespread, so it is difficult to understand why no one seriously challenged the idea that a similar airborne assault on England was really possible, or indeed likely.

Nevertheless, later that month, despite any solid evidence that the charges that airmen on Crete lacked fighting spirit, the Secretary of State for Air, Sinclair, weighed in to agree with the spirit of Churchill's rant:

We are as determined as you that aerodrome defences shall be brought to the highest pitch of efficiency, that every airman must have a definite place in the scheme of defence, that as many as possible shall be equipped with weapons, however rudimentary, and that all should be imbued with a fighting spirit⁹⁹.

Soon after, another committee chaired by Sir Samuel Findlater Stewart, a civil servant with an executive post in Home Defence, examined ways to improve airfield defence, reporting their conclusions on inter-Service responsibilities to the Chiefs of Staff. The upshot was the

recommendation that the RAF should form its own Aerodrome Defence Corps under the executive control of the Air Ministry and that a force 79,000 strong would release 92,000 soldiers from airfield defence tasks¹⁰⁰. The Corps became the RAF Regiment.

Concluding Thoughts

Historians agree that the German occupation of Crete was a pyrrhic victory in that the island was never used as a major base from which to attack Egypt or interfere with the battles raging in Libya. But the consequences of the German victory resonated in England too, particularly as this new way of waging war was adjudged a viable method to achieve strategic aims, where the benefits – albeit expensively bought - outweighed the costs. The fear of an airborne invasion of England increased substantially, tying down a considerable force in home defence activities¹⁰¹. After Crete, Churchill's interest in the opportunities afforded by parachute troops, which had first emerged in 1940, were significantly reinvigorated. Unfortunately, his gaze focussed rather unfairly on the ability of RAF groundcrew to defend their airbases.

Churchill's role in securing General Freyberg as the Commander of British forces on Crete is also significant as, ultimately, despite Freyberg's initial fears, he agreed that the island could be defended despite air superiority being conceded to the GAF. However, when preparing for the battle Freyberg's assessment of the Ultra intelligence caused him to believe that the seaborne threat was at least as great as the threat from parachute and airborne troops and despite his guidance to position troops so they could make quick counter attacks to deny the Germans the airfields his commanders deployed their New Zealand troops in a way that diluted their impact to such an extent that the prime target of the morning attack, the airfield at Maleme, was grossly under protected. As a result of this error the relatively small RAF contingent on Crete was disproportionately represented at the main point of the German attack. The RAF personnel, for the most part, were armed but had little training in the use of the weapons available. They took their place in the defence scheme, improvised armament and manned some of the most vulnerable positions, and did what they could to defend the airfields and their radar sites.

Though it is true that the New Zealand Battalion dispositions in the vicinity of Maleme, albeit some distance from the airfield, had to deal with the groups of parachute troops that landed near them, the effective opposition from these troops had been dealt with by mid-afternoon and the opportunity to secure the airfield, by means of counter attacks, should have been taken as soon as possible, after all that is what the orders said they should do. However, the initial positions of the New Zealand troops, other than those from 22nd Battalion, together with the poor and inarticulate communications between Andrew and Hargest stymied options for counter-attack, causing those that were launched to be small-scale, disjointed and poorly coordinated. This was a failure of the New Zealand Command.

It is worth noting that Freyberg's experiences in Greece had made him aware of the psychological effect of the loss of air superiority on his forces. However, despite his recent

experiences in this regard he was still unwilling to make the requirement for air defence, and a significant uplift in air defence fighters in particular, conditional on making positive assessments of his ability to repel the German invasion, though with increasing concern and alarm he did articulate his worries in later signals, once the battle had begun. Freyberg may have thought that he could hide his misreading of the Ultra intelligence behind the veil of secrecy that surrounded it until 1974. Whether the author of the Official New Zealand history knew about Ultra is open to question, but if he did his narrative should be seen in a new light. After the defeat the tendency to ignore Freyberg's assessment before the battle: that the battle could be won without air superiority, perpetuates the historiography. As a consequence the myth of RAF failure at Maleme has perpetuated into popularised history. Correcting this misnomer has been long overdue.

Notes

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¹³ D. M. Davin, *The Official History of New Zealand in the Second World War 1939-1945* (Wellington: Historical Publications Branch, 1953), p.39.

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³⁰ RAF Narrative, p.71.

³¹ RAF Narrative, p.74. Air Chief Marshal Sir Frederick Rosier, Bracknell Paper 3, discussing Crete.

³² Paul Freyberg, *Bernard Freyberg VC: Soldier of Two Nations* (London, Hodder and Stoughton, 1991), p.315. RAF Narrative, p.3, Note (2) The other members were Commander Wauchope; Wing Commander Huddleston and Lieutenant Colonel Bastin. It met in Cairo in June 1941 to enquire into the lessons of the Cretan Campaign and reported on 2 July 1941.

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⁴⁵ Davin, *Official History*, p.55.

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RAF airmen were positioned in the river bed and opposed the parachute troops trying to cross the bridge.

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⁶⁹ Ibid., pp. 85-86.

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Air Marshal Sir John Slessor: The Unsung British Cold War Strategist

By Mr Bill Pyke

Biography: Mr Bill Pyke recently completed an MA in Air Power Studies at the University of Birmingham, under the guidance of Air Commodore (Retd) Peter Gray. Bill previously had a 42-year career in the oil industry. He has always maintained an active interest in air power. His article, based on his dissertation, focuses on Air Marshal Sir John Slessor, and his role and influence in developing Britain's strategic nuclear deterrent.

Abstract: Air Marshal Sir John Slessor was Chief of the Air Staff between January 1950 and December 1952 at a time of heightened Cold War confrontation. Cold War historians have focused primarily on the key politicians, international crises and the threat of nuclear weapons. However, little attention has been paid to the influence of senior military leaders, of whom Slessor was a notable example. Slessor is an unsung Cold War strategist who played the pivotal role in making British nuclear deterrence a physical reality. His involvement ensured the implementation and build-up of the RAF's complement of strategic jet bombers (the V-force) designed to deliver Britain's nuclear weapons. That policy of defence through nuclear deterrence established the bedrock of British strategic defence thinking that continues to the present day.

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Sir John Slessor... one of the very few who had thought through the significance of nuclear weapons, and if he had not invented had certainly popularised the concept of 'nuclear deterrence', which he introduced into British defence policy in 1951, some three years before it was accepted by the US Joint Chiefs of Staff.

Sir Michael Howard, 2006¹

Introduction

Air Marshal Sir John Slessor (1897-1979) stands out as the most effective Chief of the Air Staff (CAS) of the early Cold War period. But, what justification is there for this claim? What made Slessor unique? This article will answer these questions by focusing primarily on Slessor's time as CAS between January 1950 and December 1952, and examines his key achievements in that period. In summary, Slessor changed the thinking about Britain's defence policy through nuclear deterrence and how that later influenced American thinking. He dealt effectively with the political and military challenges of a fraught Anglo-American relationship, particularly during the Korean War. Through his persistent drive, he started the build-up of the British V-force against a background of national austerity. Finally, Slessor was directly involved in initiating the early Anglo-American reconnaissance flights over the Soviet Union. Through his achievements as CAS, Slessor left a legacy that ultimately led to the era of British strategic nuclear deterrence through air power, during the twelve years between mid-1957 and mid-1969².

Slessor's background and experience sheds light on why he was so well suited to his role as CAS in those critical years of the early Cold War. His air force career of 37 years spanned the period that included the inception of military air power during the First World War through to the atomic air power era of the late-1940s and 1950s.

John Slessor joined the Royal Flying Corp (RFC) in 1915, and qualified in that same year as a pilot-officer³. He subsequently saw action on the Western Front, Egypt, and the Sudan, for which he was awarded the Military Cross⁴. After the end of the First World War, the fledgling RAF's high command recognised Slessor's qualities of original and flexible thinking. He was one of Trenchard's protégés.

Slessor was an original thinker on air power issues and its evolution. Throughout the 1920s and 1930s he held various staff positions that covered policy, strategic and tactical planning. In 1936, his first book, *Air Power and Armies*, highlighted the importance of air supremacy and the value of air interdiction that 'may stop men or their supplies arriving at the battlefield at all'⁵. This prediction became reality in Northern Europe before, during and after the OVERLORD campaign in 1944. Phillip Meilinger credited Slessor as the most prescient thinker in the RAF during the interwar years 'regarding the form future war would take'⁶.

Slessor had strong interpersonal, diplomatic and communication skills which were a great asset during his full and frank discussions with the American Joint Chiefs of Staff (JCS) during

his time as CAS. He had honed those skills during the Second World War. Slessor was popular with his American opposite numbers. He was a key RAF representative during the early-1941 ABC staff conversations in Washington with American senior military commanders, and prior to America's entry into the Second World War⁷. There was close agreement between the RAF and the United States Army Air Force (USAAF) on the need for a substantial build-up of bomber forces⁸. Slessor's notable negotiating success during the ABC meetings was embodied in the so-called 'Slessor Agreement': a plan to allocate to the British a fifty per cent share of America's new aircraft production, until such time as America came into the war⁹. As a further example of his diplomatic skills, he was instrumental in re-drafting the final and acceptable form of the Casablanca Directive in January 1943, following the earlier sharp differences between British and American high commands relating to priorities and strategies¹⁰.

Slessor was an advocate of strategic bombing that had reflected Trenchard's thinking, that evolved during, and since, the First World War. This idea had continued to shape his belief in his role in the immediate pre-war period as Director of Plans at the Air Ministry and later AOC of 5 Group, Bomber Command in 1941-42. It is notable that, in his role as an operational commander, Slessor continued to be consulted on policy by the Air Ministry. He relayed important policy issues to Trenchard who used the information in the House of Lords¹¹.

Slessor was familiar with the challenges and benefits of Anglo-American coalition warfare. He had experienced a difficult relationship with Admiral Ernest King during the Battle of the Atlantic in 1943 when he was CinC, Coastal Command. Slessor recognised that obstinacy could jeopardise success. He recognised that inter-Service rivalries - army or navy versus air force - could often be more challenging than national differences. Conversely, Slessor saw the benefits of close and successful air coalition during his time as deputy to the American Lieutenant General Ira Eaker, CinC, Mediterranean Allied Air Forces. This experience was to shape his view and enthusiasm for a post-war Anglo-American air power alliance to counter the emergent Soviet threat¹².

The historiography of how leading historians assessed Slessor's role as CAS reveals a significant contrast of views. Many of the historians, political scientists, nuclear deterrent theorists, journalists and other commentators have simply underestimated or ignored Slessor's important contributions. The notable exceptions include the British historians Sir Michael Howard, Anthony Seldon, Henry Probert and the American historians Phillip Meilinger and Andrew Pierre. Howard commented in a lecture that he delivered in 1998 that 'Slessor had thought through, and persuaded his service colleagues and political masters to accept a doctrine of nuclear deterrence that was to provide the basis of all of thinking until the end of the Cold War'. Meilinger wrote that Slessor was a 'prescient thinker' who was 'one of the great stars in the Royal Air Force firmament' and extolled his talents as a 'flexible and resourceful leader during the particularly difficult and dangerous years of the early Cold War'¹³. Not everyone agreed. The journalist and military author, Sir Max Hastings underrated Slessor. In a two-page biography, he wrote: 'Slessor stood foremost amongst the second rank of airmen of the Second

World War behind Portal, Tedder and Harris'. Hastings added only two lines on Slessor's advocacy of atomic air power as a deterrent against war¹⁴. After Slessor's death in 1979 *The Times* obituarist wrote that 'he was not a commander who caught the attention of the man in the street'. This article will demonstrate why this unsung Cold War strategist deserves more attention.

Setting the Context: Early Post-War Britain, 1945-1949

To understand how and why Slessor was an effective Cold War strategist, it is important to assess Britain's political, economic, and military position in the late 1940s, immediately prior to his appointment as CAS. Britain had fought through the nearly six years of the Second World War at the cost of near bankruptcy. Furthermore, the Truman administration abruptly terminated the wartime 'Lend-Lease' arrangement in August 1945. The incoming Labour government soon realised that the 'special relationship' was neither close nor special¹⁵. Many American politicians adopted an isolationist policy, while insisting on maintaining its global nuclear monopoly. In this febrile atmosphere, Congress passed legislation in mid-1946 in the form of the Atomic Energy Act. It was better known as 'The McMahon Act' and named after Senator Brien McMahon, the sponsor of the legislation. The Act prevented the passing of nuclear information to any foreign country or foreign individual, thereby retaining an American monopoly on nuclear energy and atomic weapons. The British Prime Minister, Clement Attlee, felt the United States were guilty of a breach of faith¹⁶. At wartime meetings between Churchill and Roosevelt in 1943 and 1944, agreements had been finalised to continue with collaboration and exchange of information on nuclear research and development after the War¹⁷.

In the context of Britain being frozen out of any future collaboration on nuclear energy and weapons development, Margaret Gowing, the official historian of British nuclear energy in the post-war period, wrote: 'If Britain wanted to be sure of being covered by an atomic deterrent, she had no option but to make it herself'¹⁸. In January 1947, at a special meeting of the Cabinet's GEN 163 Committee, the decision was taken to develop the British atomic bomb. At that meeting Ernest Bevin, the Foreign Secretary, stated that 'we could not afford to acquiesce to an American monopoly of this new development'¹⁹. Atomic research and development of Britain's atomic weapon was given 'super-priority' despite national austerity. Development continued in secret throughout the late 1940s. The top-secret Tizard Committee Report had been circulated to senior military commanders a month before the first detonation of the atomic bomb in New Mexico in late July 1945. It concluded that 'the only answer we can see to the atomic bomb is to be prepared to use it ourselves in retaliation. The knowledge that we were prepared to do this might well deter an aggressive nation'. This early pronouncement of nuclear deterrence theory was subsequently taken up by politicians in post-war Britain. Clement Attlee was the first British leader to consider a policy of nuclear deterrence. At a Cabinet meeting in August 1945 he stated: 'the answer to an atomic bomb on London is an atomic bomb on another great city'²⁰. Lord Tedder, Slessor's predecessor as CAS, argued for a policy of nuclear deterrence throughout the late 1940s.²¹

The Air Staff issued design specification B.35/46 for an aircraft capable of delivering the atomic weapon. The specification required that the aircraft would be capable of flying at 500 knots; reach altitudes of 50,000 feet; have a range of 1,500 miles from base to deliver a 10,000lb bomb²². However, from late 1946 onwards, defence expenditures were subject to a 'Ten-Year Rule' that stated that no major war was anticipated before 1957²³. 'Super-priority' status was not given to the urgent development of a high-altitude jet bomber capable of delivering the atomic weapon.

The Anglo-American relationship improved in late 1947. The dawning realisation that the Soviet Union threatened peace and stability to the Western democratic nations led to a closer association. Moreover, Britain had assets that would bolster American security. Notably, these included Britain's location as the 'unsinkable aircraft carrier' which put Soviet targets within range of the B-29 bomber; a reallocation of Britain's reserves of high-grade uranium ore necessary for expansion of America's atomic weapon inventory; and access to British military and political intelligence²⁴.

In the period between early 1945 and late 1949, Slessor's position in the RAF's hierarchy appeared to have been marginalised. He was appointed Air Member for Personnel (AMP) at the Air Ministry until December 1947. Thereafter, he was appointed as Commandant of the Imperial Defence College in January 1948. Many observers may have thought that this appointment was a sideways move, prior to retirement. The perception would have been wrong. Slessor clearly had support in high places to replace Lord Tedder as CAS. The air historian Henry Probert commented that this time 'gave him the opportunity to think deeply about strategic problems of the post-war world and the roles of air power in the nuclear age'²⁵. In 1948, Slessor conducted a lengthy lecture tour of United States military staff colleges and participated in talks with senior Pentagon officials²⁶. Two lectures that he gave during that tour were published subsequently in his book, *The Great Deterrent*. Both lectures gave an insight into Slessor's thinking and evolving strategy to confront the Soviet threat. During this tour, Slessor also realised that the US defence community was riven by fierce debates over the role of atomic weapons and the question of which Service was going to be responsible for their delivery. In addition, he noted the poor relationships between each individual Service and the Department of Defense²⁷.

During the late 1940s, attitudes amongst the Western governments were changing rapidly as the international situation deteriorated. The Berlin Blockade (1948-49) led to the formation of NATO in April 1949. The alliance initially comprised the United States, Canada and ten Western European countries. Later that year, The Soviet Union tested its first atomic bomb, known in the West as 'Joe-1'. Between 1945 and early 1949, British defence policy had centred on the expansion of fighter squadrons to be used in the role of UK air defence. The advent of the Soviet atomic bomb and the eventual appearance of numerous long-range, high-altitude bombers rendered that policy obsolete²⁸. On becoming CAS in January 1950, Slessor was to have a significant influence on Britain's defence policy.

Moving from Theory to Practice: Slessor as Architect of the Airborne Nuclear Deterrent

One of Slessor's greatest challenges during his three years as CAS was the continual pressure that he needed to exert on politicians to continue with the build-up of the revolutionary four-engine jet bombers, specified in B.35/46, against the background of post-war austerity. Defence took the largest slice of public expenditure during the period from 1950-52: averaging 30%, nearly 10% of GNP²⁹.

On his first day as CAS, he sent a position note to Arthur Henderson, the Secretary of State for Air, on the poor state of Bomber Command:

The provision for the Royal Air Force over the period 1950-1953 leaves the service in no position to meet its commitments in the event of war...the conception of the "visible deterrent" - a powerful first-line to discourage aggression is no longer tenable, if ever it was. It is a policy adopted in the last cold war from 1937 to 1939 when it was completely ineffective³⁰.

The RAF's front-line force had declined from a peak of 55,000 aircraft in 1945 to little more than 1,000 in 1947³¹. By 1949, Bomber Command had only twenty squadrons of obsolescent Lincolns and Lancasters with a front-line strength of no more than 140 aircraft³². In the era of fast jet fighters, the RAF's piston-engine bombers were incapable of presenting a credible threat to Russia. Furthermore, the bombers did not have the range to hit Soviet targets. Slessor was committed to building up the new generation of four-engine jet bombers that could reach targets in Western Russia and the East European satellite states.

Peter Hudson, who worked in the secretariat at the Air Ministry, commented that during 1950 Slessor developed an ambitious plan for the role, deployment, and build-up of up to 240 strategic jet bombers³³. However, defence budget restrictions during the final two years of Attlee's Labour government frustrated his efforts. Ironically, it was the shock of the Korean War that fundamentally changed thinking on previously restricted defence expenditures. Attlee's government approved a comprehensive rearmament programme that started in late 1950. Parliament voted an additional £100 million immediately for defence and for a three-year build-up that would ultimately cost £5.2 billion³⁴. The defence build-up included an order for twenty-five B. 9/48 jet bombers [later to be named the Valiant] in early 1951³⁵. Though the Valiant had not yet made its first flight, the Labour government recognised the urgent need for its early production and entry into Bomber Command. However, it would be nearly four years before the first Valiants entered squadron service in February 1955.

Budget restrictions in a period of austerity continued to be a challenge, even after Churchill's Conservative government won the general election in October 1951. Slessor expressed real concern about reduction, or even cancellation, of the V-force build-up. To alleviate budget

problems at a time of austerity, there was a persistent idea held by some Conservative ministers that strategic [nuclear] bombers should be left to the Americans. At times, even Churchill and Lord Alexander, the Defence Minister, questioned the wisdom of continuing with the strategic jet bomber programme.

On 11 January 1952, the first Valiant prototype crashed after a flight trial for an engine shutdown and re-light³⁶. Churchill wrote a minute to Norman Brook, Secretary of State for Air, stating:

Thank you for your explanation issued to the Press about the crash of the prototype "Valiant". I am glad the crew escaped. I suppose we have lost quarter of a million pounds. This is a heavy blow to all that line of Air thought who argue that Britain should plunge heavily on the largest class of Air bombers. The Americans will do this, and also have the things to carry. We should concentrate **not entirely** but far more on the fighter aircraft to protect ourselves from destruction. I am not at all comforted by the assertion that you are going to make a lot more "Valiants" even though you may avoid repetition of this initial disaster³⁷.

Despite the obvious pessimism, the unfortunate crash did not seriously slow down the production schedule. The design faults were rectified. The second Valiant prototype became available for testing in April³⁸. By June, Churchill and the rest of the Cabinet approved the recommendations of the 1952 Defence and Global Strategy Paper, largely authored by Slessor, and the decision was taken to obtain Valiant jet bombers in quantity and officially give 'super-priority' for their production³⁹. Slessor now had a mandate to proceed with the build-up of the British strategic nuclear bomber force. He had suggested the name 'V-force' for the new bombers during an Air Council meeting in 1952. The name was based on the wing shape of the three variants. Slessor stated that his own preference was 'to establish, so to speak, a "V" class of jet bombers'⁴⁰. The three models of the bomber that evolved from the original B. 35/46 design specification became better known as the Vickers Valiant, the Avro Vulcan and the Handley Page Victor. Slessor made the decision to approve the three types of V-bomber stating: 'He would have been a very bold man who could have selected the best of the three V-bombers until we tried out all three we couldn't say which was the best'⁴¹. He was repeating the tried and tested experience of the 1930s when the RAF was evaluating the pre-war long-range bombers: the Manchester, Stirling and Halifax⁴². Duncan Sandys of the Ministry of Supply agreed, asserting that: '...in equipping an air force, as in racing, it is risky to put all your money on one horse, or to try to guess the winner too long before the race'⁴³. Slessor's decision to proceed with all three different models was vindicated during the 1960s. The Valiant was found to have metal fatigue problems. The tactics for a nuclear attack on Soviet and Eastern European targets changed from high altitude to a low altitude approach to avoid a new generation of Soviet surface-to-air 'Guideline' SA-2 missiles. The Valiant was withdrawn from the strategic V-force operations when its airframe was found to be unsuitable to deal with low altitude turbulence⁴⁴.

Slessor had to continue to fight for continuation of the V-force build-up. Both Churchill and Lord Alexander continued to express doubts, and to perhaps slow down or even cancel the V-force, and consider 'leaving strategic bombing to the Americans'. Slessor felt compelled to write to Alexander stating:

In connection with our bomber programme, the Prime Minister has more than once referred to the same thing [leaving it to the Americans]. The influence of Atomic Air Power is a fundamental factor in the Chiefs of Staff Global Strategy policy. The provision for a Medium Bomber Force in the R.A.F. share of the new rearmament programme is far from excessive. I am convinced that it would be absolutely fatal for us to adopt the line that we can leave all long-range Bomber operations to the Americans⁴⁵.

Slessor subsequently met his old mentor, Lord Trenchard, and shared his concern that 'he didn't trust our [political] masters about the bomber force'. Slessor feared that the V-force build-up might have been cancelled as an act of political expediency at a time of national austerity. Shortly after writing to Alexander, he sent a personal letter to Trenchard on 3rd October:

I'm still afraid that if the Treasury push really hard, the eyes of the Cabinet will turn, not to teeth and spectacles, and housing and welfare generally, but to the bomber force as a means of saving money⁴⁶.

On that same day, Britain detonated its first atomic bomb in the Monte Bello islands off north-west Australia in the culmination of Operation HURRICANE. Britain now joined America and the Soviet Union as an atomic power. With national prestige restored, Churchill would certainly have seen the advantage of the nuclear weapons programme together with the development of the V-force. However, Slessor remained suspicious of political motives.

On his last day as CAS, Slessor wrote to Churchill:

Tomorrow I am leaving the employed list of the R.A.F. after nearly 38 years in the Air Service and shall have no more share in the responsibility for shaping our military programmes. Whilst it is clear that the Chiefs of Staff themselves understood the importance of the bomber in British policy. I have sometimes felt that it is not universally recognised as the vital thing it is... Are we to leave all this to our American Allies? We can never aspire to match them in numbers. But we have an unparalleled contribution to make in quality and fighting value, in battle experience, in technique, design and invention. The British four-jet bombers now flying are the best in the world⁴⁷.

Despite Slessor's concerns, his persistence had finally paid off. In December 1952, the government had finally committed to production, giving super-priority, of all three V-bomber variants. The estimated cost of the proposed production run of 220 V-bombers was £275 million (£7.4 billion in 2017 terms)⁴⁸.

Slessor's Influence on Politics and Strategy: The Interrelated Issues of Strategic Air Command (SAC) bombers based in England and The Korean Crisis, October 1950-January 1951

In Slessor's first two years as CAS, Britain was highly vulnerable to the Soviet threat. It had not yet developed its own atomic weapon nor a bomber to deliver it. Britain depended on American nuclear cover without having any influence over how, and when, it might be used. As early as June 1946, an informal agreement between Lord Tedder and Carl Spaatz, then commanding general of the United States Army Air Force (USAAF), planned to make available four to five RAF air bases to the USAAF at times of acute international crises, on a temporary basis⁴⁹.

The Berlin Blockade between June 1948 and May 1949 set the precedent. That precedent led to permanent basing arrangements that continue to the present day. Following the 1948/1949 Berlin Crisis, the SAC's bombers remained at their bases in Eastern England. Ernest Bevin, the Foreign Secretary, had initially welcomed the USAF presence, but with no comprehensive written agreement in place⁵⁰. However, the basing of the SAC's atomic-capable B-29 'Silverplate' bombers would subsequently lead to acute concerns for Britain's exposure to Soviet nuclear attack during Slessor's time as CAS. The Russian leadership would have considered the American nuclear armed bombers based in Britain as a distinct threat to its homeland. The Russian Tu-4s, a reverse-engineered copy of the American B-29, had started to enter service with the Russian Long-Range Air Force in 1949. Known in the West with the NATO codename "Bull", the Tu-4 had the operational capability to attack British targets, possibly with atomic bombs, as early as 1950⁵¹. Fear of a nuclear attack started to enter the national consciousness. In March 1950 and again in February 1951, Churchill, then Leader of the Opposition, saw Britain as a prime target for a Russian atomic attack. In Parliament, he stated that:

We must not forget that by creating the [American] atomic base in East Anglia we have made ourselves the target, and perhaps the bullseye of a Soviet attack...if Russia had 50 [atomic bombs] and we got those 50, fearful experiences, far beyond anything we have endured, would be our lot⁵².

Slessor was concerned that there was still no comprehensive and clearly written joint agreement that covered the use of SAC bombers from airbases in Britain. The Americans refused to share their strategic air plans with their British allies: a notable contrast to the close, open and cooperative relationships during the Combined Bomber Offensive during the Second World War. The issue centred on sovereignty: the Americans wanting unrestricted freedom of action to use their nuclear weapons where, and when, they wished; the British were concerned about their vulnerability: that actions elsewhere in the world might put Britain at risk of a Soviet atomic attack.

This drew Slessor to articulate his concern regarding Britain's vulnerability at a time of acute international crisis. With his typical foresight and strategic vision, Slessor had already considered the possibility that an American overreaction to a crisis elsewhere in the world might draw Britain into a major conflict⁵³.

From mid-1950 onwards, this scenario became a distinct possibility. General MacArthur's stunning invasion success at Inchon, the coastal port near Seoul, in mid-September emboldened him to recommend pushing on into North Korea. Slessor predicted correctly that MacArthur's recommendation to advance north of the 38th Parallel would lead to escalation by drawing the Communist Chinese, and possibly the Russians, into a wider and deeper conflict. In early September 1950, he wrote presciently:

if we are not careful, a victory in South Korea, instead of enabling us to reduce our commitments there and concentrate our resources on the really important things - particularly securing the European front - may let us in for extended and indefinite commitments and even in the worst case, involve serious risks of a clash with Russia and Communist China⁵⁴.

Slessor warned both Attlee and Bevin of the dangers of Britain supporting MacArthur's proposal. However, despite Slessor's warnings, Bevin agreed initially to MacArthur's plan. He was keen to maintain good relationships with Washington⁵⁵.

Slessor's prediction became a reality in late October 1950 when an initial force of 120,000 Chinese Communist troops massed across the Yalu River and pushed the UN forces into retreat⁵⁶. By mid-November that number had doubled to 250,000⁵⁷. This crisis also alerted the British government to the possibility of global war, and of SAC bombers in Britain being used to attack targets in Russia. In late November, Truman held a press conference in which he did not rule out the use of atomic weapons to regain the initiative⁵⁸. In an atmosphere of rising international tension, the JCS alerted Curtis LeMay, the SAC's commanding general, that 'the current situation in Korea has greatly increased the possibility of general war'⁵⁹.

With the real possibility of the crisis escalating into global war, Attlee requested an urgent meeting with Truman in Washington in early December. Truman agreed to the meeting. Attlee was concerned about the direct threat all this posed to Britain. Slessor travelled to Washington in January 1951. He attended meetings at the Pentagon where he had the opportunity to discuss the twin issues of the Korean crisis and the war plans for SAC bombers based in England. Slessor was forthright with his comments on Korea, stating:

There was in England and the Commonwealth a very real concern about the possibility that present tension might lead to general war before we were ready... There was finally among Ministers, the Chiefs of Staff, in the Press and in all sections of the public a general feeling of puzzlement about the conduct of the campaign in Korea and concern about where it was leading us to. The Chiefs of Staff were frequently asked for their appreciation of the situation and found it very difficult to give a sound reply in view of the somewhat scanty and often conflicting information we received. There was also a feeling in England that General MacArthur, whom we all recognised as being a great soldier, was nevertheless inclined to be too political and too independent of Washington control⁶⁰.

It is rare for Chiefs of Staff to be praised and acknowledged by senior politicians for their wise and valuable advice in the matter of international relations and global strategy. At a Cabinet meeting in January 1951 Ernest Bevin, Foreign Secretary, praised both Slessor and William Slim, then head of the Army, for providing clear advice that was incorporated in the high-level discussions with the Americans at the time of the Korean crisis⁶¹.

The British historian Peter Lowe wrote of the Korean crisis that:

Slessor intellectually was the ablest of the chiefs of staff and he revealed courage and shrewd judgement in his appraisals of Korea. Undoubtedly, he provided the leadership which soon carried the defence chiefs into increasingly urgent warnings of escalation within Korea⁶².

By mid-February, the Korean crisis had passed. The UN forces, led by American forces, fought back effectively, and stabilised their position. In April 1951, General MacArthur was replaced, but his actions had led to a military stalemate on the borders of North and South Korea that was to last for a further 30 months.

Attlee received no clear information or plan from Truman on the potential use of the SAC bombers based in Britain. Truman gave Attlee only a 'verbal assurance that the U.S. government would not consider using the atomic bomb without consulting the United Kingdom'⁶³. However, the subsequent communiqué issued by the American side after their meeting contained only vague platitudes, and made no mention of "consultation"⁶⁴. On Attlee's return to London, Slessor and the other Chiefs of Staff were 'left in the dark... and had little grasp of the outcome of the Truman-Attlee talks'⁶⁵.

The vexed issue surrounding the SAC bombers in England continued to be an unresolved issue for the remainder of Slessor's time as CAS. In late December 1950, Slessor with the other Chiefs of Staff had requested Lord Tedder, then head of the British Joint Service Mission (BJSJ) in Washington, to approach the American Joint Chiefs of Staff (JCS) to gain a clear understanding of America's plans to use its British-based bombers in the case of war⁶⁶. Tedder failed to get any further information from the American JCS. Subsequently, Air Marshal Elliot, Tedder's replacement at the BJSJ, also failed to make any progress on this issue. In desperation, Slessor produced a paper for the COS committee which addressed his so-called 'stop lines': the scenarios under which nuclear war might be initiated in response to Soviet aggression in Europe⁶⁷. The paper was sent to Elliot to discuss with the American JCS. Slessor was attempting to flush out the American position⁶⁸. The American JCS did not change their position. They would not disclose their war plans to the British.

However, the American JCS position should be considered in the context of the McMahon Act. The Act prohibited American citizens, military or civilian, from having any discussion with foreign representatives that were related to nuclear issues. Any violation could lead to prosecution that

could lead to a sentence of 'life imprisonment or death'⁶⁹. Moreover, the revelation that Alan Nunn May and Klaus Fuchs, both British atomic physicists, had passed secrets to the Russians only served to reinforce an American perception of the fragility of British atomic security⁷⁰.

Elliot met the American JCS in September 1951. During those discussions, Nathan Twining, the deputy Chief of Staff of the USAF, commented 'our people are so het up over the Soviets that we must use the [atomic] bomb'⁷¹. Slessor always saw the atomic bomb primarily as a political weapon, he was concerned with American ideas of using nuclear weapons for a future war fighting strategy. In his 1948 lecture, "The Chance of War" to the Air War College, Slessor cautioned his audience about talk of a so-called 'preventive war' against Russia while America still had the advantage of a nuclear monopoly⁷². USAF senior commanders: LeMay, Vandenberg, Power, Kenney, and Twining had all privately supported the pre-emption concept⁷³. Apart from political and moral considerations, Slessor considered this kind of thinking was wrong and would only increase the chance of war occurring. In a letter to his American friend, George Fielding Eliot, Slessor wrote: 'we are in the atomic front line and you are still the hell of a long way from it, and the experience of the Korea panic last winter does make us wonder a bit what you are liable to do in another really critical situation'⁷⁴. No amount of dialogue from Slessor, Elliot or Oliver Franks, the British ambassador in Washington, moved the American JCS from their intransigent position. More out of frustration, Slessor and the other Chiefs of Staff sent a message to Elliot to pass on to the American JCS which read:

The United Kingdom is not an American aircraft carrier conveniently anchored off the coast of Europe. We are their only really solid ally - in the long run as indispensable to them as they are to us - and we intend to be treated as such. And in this matter, more perhaps than in any other strategic matter, we insist on having an agreed policy thought out in advance⁷⁵.

The rejection of requests, undue delays and obfuscation on the American side dogged the relationship between the British Chiefs of Staff and the American JCS until the end of Attlee's government in October 1951. American politicians and senior military commanders were always suspicious of Attlee's post-war Labour government. Professor Ken Young, a British political historian who studied Anglo-American Cold War issues, wrote 'U.S. officials worried that some Labour ministers were unduly sympathetic to Soviet interests'⁷⁶.

The 1952 Global Strategy Paper: Slessor: *Primus Inter Pares* of the Chiefs of Staff

The return of a Conservative government in October 1951, with Churchill as Prime Minister, was welcomed by many in the Armed Forces. In addition, the Truman administration and many Americans were pleased to see Churchill returned. Churchill visited Truman in Washington in January 1952. In the atmosphere of a much-improved relationship, the American JCS gave Churchill a comprehensive briefing on America's advances in nuclear weapon technology, the build-up of their nuclear arsenal and of America's war plans⁷⁷. On his return Churchill considered

that a fundamental reappraisal of Britain's defence policy was long overdue. He instructed the Chiefs of Staff to develop a paper, outlining their ideas, to address the issues. Slessor was a strong-minded character, and a natural committee chairman. In April 1952, as *primus inter pares* of the Chiefs of Staff Slessor proposed that they needed uninterrupted time away from their normal duties to meet, discuss and agree defence policy and strategy. Slessor chose the Royal Naval College at Greenwich. There, they could take the time to summarise their ideas and, over five days, they produced a preliminary draft of what was presented to the Cabinet in June and circulated as the paper on Defence and Global Strategy in July⁷⁸. It later became more widely known as the 1952 Global Strategy Paper (GSP). Slessor took a dominant role in writing the key sections of the paper, and it contained many of the ideas that he had developed since 1945. In summary, the GSP made three important points. It placed nuclear deterrence at the centre of British defence policy. It talked of the need to prepare for a long Cold War. Finally, it considered the planned build-up of large conventional forces in Europe was both unrealistic and economically unacceptable.

Two years earlier in April 1950, the United States National Security Council had circulated a policy document entitled NSC-68⁷⁹. The document called for a substantial rearmament programme to meet the perceived Soviet threat. In respect to the defence of Europe, the Medium-Term Defence Plan (MTDP) reflected NSC-68 policy and formed the basis of the NATO 'force goals'. In summary, the MTDP established a clear 'division of labour' that allowed the United States to develop its nuclear war plans without Allied interference. Meanwhile, the [European] Allies were encouraged 'to develop ground forces for the defence of Europe'⁸⁰. It called for NATO members to build up a conventional force of 9,000 aircraft and 96 army divisions by 1954 to meet the perceived Soviet threat from Eastern and Central Europe. Slessor recognised that the impossibly large expenditures on conventional defence would have a detrimental impact on the general economies of Western Europe. The Western European NATO members were still in a fragile economic state after the war and, furthermore, had suffered a further recession between 1950 and 1952. In November 1951, Slessor wrote:

Over-expenditure on rearmament, leading to the ruin of the economy of Western Europe, would be to play the Communist game and to present Russia with a bloodless victory gained at the sole cost of playing upon the nerves of the Free World⁸¹.

It is important to note that the GSP was written as much for American politicians as it was to reappraise Britain's defence policy⁸². To emphasise this point, Churchill sent Slessor to Washington in July 1952 with the intention of getting the American JCS to agree to an Anglo-American nuclear deterrence policy. Slessor presented the GSP to the American JCS in July 1952. The defence policy and strategy expressed in the GSP was at variance with the American plan. The JCS saw the policy change as an indication that the British were reneging on their NATO [conventional] force goal commitments previously agreed by the North Atlantic Council (NAC) in Lisbon earlier that year⁸³. The JCS took a dim view of the planned reduction of British troops in Western Europe, while at the same time planning to build up the RAF's V-force and expanding

their atomic weapons production⁸⁴. Slessor was forthright with his response to the JCS, arguing that there was a need for a fundamental change of NATO strategy. He stated that the Lisbon 'force goals' were an 'economic impossibility, a logistic nightmare and strategic nonsense'⁸⁵. None of NATO's Western European members could realistically achieve the goals at a time of recession and continuing austerity. Inter-Service rivalry within the American JCS structure continued to affect the ways in which it functioned. The joint view of the Chiefs did not necessarily reflect individual views. The USAF thinking was far closer to Slessor's position. Nathan Twining, Deputy Chief of USAF's Air Staff, told Slessor privately that 'they shared the British view'⁸⁶. All the Western democracies, including America, were keen to ensure that their electorates would start to see the benefits of non-military public expenditure. Air Vice-Marshal Tony Mason wrote in 1994 that 'the force goals were never attained and deferred indefinitely in April 1953'⁸⁷.

Thinking about nuclear deterrence was also changing in America. In early 1953, Charles Murphy, an influential New York columnist who was also a USAF reservist and air power apologist, wrote succinctly that the British initiative gave 'substance to the abstractions and theories on air power...an actuality, feared by Soviet Russia, and therefore a potent instrument for military and diplomatic action'⁸⁸. By late 1954, Eisenhower's 'New Look' programme mirrored GSP thinking on the employment of nuclear weapons for deterrence⁸⁹. However, an historiographic debate surrounds the influence of the 1952 GSP on Eisenhower's 'New Look' 1954 policy. Both Slessor and Alastair Buchan, a leading writer on defence studies in the post-war period, maintained that the 'New Look' was 'a function of the ideas planted by the GSP in 1952'⁹⁰. The respected American military historian, Steven Rearden, recognised and credited linkage between the two policies when, in 2012, he wrote:

The first to acknowledge the opportunities were the British Chiefs of Staff, whose 1952 "white paper" (sic) on global strategy offered an alternative course linked directly to the utility of a growing arsenal of nuclear weapons in lieu of conventional capabilities. As British defense planners described it, the aim would be "to increase the effectiveness of existing [NATO] forces rather than to raise additional forces... Unable to elicit unanimous advice from the Joint Chiefs, President Eisenhower gave Secretary of State Dulles a free hand to come up with a plan of action. Moving quickly to avoid being pre-empted by the British, Dulles achieved high level interagency agreement by late September 1953 on a "new concept" to expand NATO's application of tactical nuclear weapons⁹¹.

Conversely, the Canadian Cold War historian, Andrew Johnston, argued that 'many of the principles of what would be known as the "New Look" were in evidence by the time Slessor visited Washington'⁹². Johnston wrote that throughout the period between the 1960s and the 1990s leading American historians had found no evidence to connect the GSP with the 'New Look' and, in any event, 'refused to credit the British with originality on such important strategic matters'⁹³. Irrespective of the differing viewpoints, both Baylis and Freedman considered that the fact still remains that both policies 'grew from the same reasoning'⁹⁴.

Cold War historians have acknowledged that the GSP represented a turning point in the way that nuclear deterrence was now placed at the centre of British defence policy. In writing about the GSP, the American historian Andrew Pierre wrote Britain 'was the first nation to base its security planning almost entirely upon a declaratory policy of nuclear deterrence' and that it should rank 'a classic amongst military documents', giving credit to Slessor for its authorship⁹⁵. Baylis and Macmillan contended that the GSP 'remains perhaps the best known, the most often discussed and the most highly regarded defence document of the post-war period'⁹⁶.

Slessor's involvement in the early Anglo-American overflights of the Soviet Union

In late 1944, the British Chiefs of Staff requested the government's technical warfare committee to produce a report that would provide them with a forecast of anticipated military developments for up to 20 years into the future. The report entitled "Future Development in Weapons of War" was produced by a team of eminent scientists headed by Sir Henry Tizard⁹⁷.

On publication, the secret Tizard Report was circulated in June 1945 by S.6 section of the Air Ministry secretariat to all the senior RAF commanders, including Slessor, requesting their comments. In realising the need for information on a future adversary's key strategic sites, Slessor responded on several key points, including air reconnaissance. He wrote of the need for 'an efficient secret service' and for the development of 'a long-range, stratospheric Photo Recce. (sic) aircraft'⁹⁸. The inability to obtain information in the late 1940s presented a major challenge to the gathering of air intelligence. Rigid control of the Iron Curtain borders together with Russia's vast landmass posed a major challenge to intelligence gathering. In the quest to develop an effective deterrence policy, Slessor recognised the urgent need for targeting information of Russia's key strategic sites. In his time as CAS, Slessor played an active role in expanding air reconnaissance operations that ranged from IMINT, ELINT and SIGINT to the high-altitude sampling of radioactive fallout debris of Soviet atomic tests⁹⁹.

Reconnaissance aircraft capable of overflying key sites in Russia and its satellite states were in short supply or still in the development stage. Until late 1952, the RAF's complement of photo-reconnaissance assets comprised aircraft, the Mosquito, Spitfire and Lincoln, that were unsuitable for gathering data over the Russian landmass. These obsolescent aircraft were limited by their speed, range and altitude¹⁰⁰. The American jet-powered strategic reconnaissance aircraft, the RB-45C 'Tornado', entered service with the SAC in 1948¹⁰¹. In their December 1950 meeting in Washington, Attlee and Truman had concluded an agreement 'to undertake periodic overflights of the Soviet Union to locate its airbases and of its long-range bomber forces that could conduct atomic surprise attacks on the West'¹⁰².

However, despite that agreement, Truman did not want to commit either American aircraft or flight crew to any overflights of the Western Soviet Union. Gathering air intelligence over an adversary's territory was, and still is, always considered a highly provocative act, with serious political repercussions. The shooting down of a U.S. Navy Privateer, a naval intelligence version

of the B-24 Liberator, off the Latvian coast in April 1950 led to strong Soviet protests at a time of international tension. Truman forbade further overflights¹⁰³.

To circumvent Truman's restriction on overflights, Hoyt Vandenberg, Chief of Staff of the USAF, contacted Elliot at the BJSM to see if RAF aircrew would fly Tornados on reconnaissance operations¹⁰⁴. A squadron of these aircraft had already been deployed from January 1950 at RAF Sculthorpe in Norfolk¹⁰⁵. Slessor agreed. He saw this as an opportunity for gathering much-needed target intelligence. Target sets included airfields, submarine pens, nuclear facilities, rocket sites, command and control centres, aircraft factories and key transportation hubs. This was classic Trenchard doctrine: identifying the enemy's key military air assets, and being prepared to destroy them.

In August 1951, six RAF flight crew led by Squadron Leader John Crampton were sent to America for training and familiarisation with the Tornado¹⁰⁶. The plan for operation JU JITSU would involve simultaneous overflight of the Soviet Union by three aircraft to gather SIGINT and IMINT on airbases located in Western Russia and the Ukraine. Slessor was directly involved in the operation. He prepared a highly restricted, top secret briefing note to Churchill, Lord Alexander and Lord Cherwell in early February 1952. In the note, he explained the importance of having target intelligence prior to the outbreak of war for any counterforce operations. He wrote:

If Russia wished to disable this country, her best chance would be to strike a crippling blow with atom bombs... the Air Defence Committee have concluded that if 50 atom bombs could be allocated for a counter-offensive against Russian airfields, the weight of the attack could be halved. This counter-offensive, if it is to be effective, must take place immediately on the outbreak of war... accurate results can only be achieved if radar photographs are available to ensure the identification of the target¹⁰⁷.

Despite his initial reservations, Churchill approved the JU JITSU 'special duty' operation on the 24th February. This was a high-risk operation. The international political consequences of the shooting down of a Tornado would have been disastrous. Such an incident might well have also led to demands for the resignations of both Churchill and Slessor. Churchill's agreement, however reluctant, is the clearest evidence of his trust and respect for Slessor's judgement and influence. The Tornados were repainted with RAF markings in readiness for the overflights, planned for April. The overflights were a success. A report written nearly two years after the overflights stated: 'During the moonless night of 17th/18th April 1952, three aircraft flew over Russian territory simultaneously and valuable results were obtained on 20 out of 35 long range airfields'¹⁰⁸. A further overflight operation, JU JITSU II, was flown in late April 1954.

The JU JITSU 'special duty' overflights also had the benefit of improving the RAF/USAF relationship. Curtis LeMay, the SAC commander, was keen to get target intelligence for his

expanding force of bombers. Those early overflights of the Soviet Union, initiated in Slessor's time as CAS, continued intermittently throughout the 1950s.

Enduring Influence: 1953-1958

Slessor had started his time as CAS with the quest to develop Britain's independent airborne nuclear deterrent. The limited period of three years in post would never enable him to meet all his goals. In early 1953, no V-force bombers had entered squadron service; forging an Anglo-American nuclear air power relationship was still a challenge; and Britain had still to get a satisfactory agreement on consulting and consent on the use of SAC bombers, based in England. However, Slessor had already changed the mindset of the British political and military leadership in respect of the role of nuclear deterrence and of Britain's standing in the world order.

During 1952, his last year as CAS, Slessor had ensured the V-force programme would continue. Between May 1951 and December 1952, all three prototypes of Britain's new V-force bombers - the Valiant, Victor and Vulcan - had made their first flights. Furthermore, after five years of nuclear research and development, Operation HURRICANE had delivered Britain's first test of an atomic weapon in October of that year. Slessor had left a significant legacy for his CAS successors: Sir William Dickson (January 1953-December 1955) and Sir Dermot Boyle (January 1956-December 1959).

The political historian Anthony Seldon wrote:

It is ironical that it was only after Slessor's departure in December 1952 that his thoughts were crystallised into policy statements, the more so as none of the three Chiefs of Staff who served during 1953-4 possessed the creative minds of Slessor's calibre... it is of note that Ministers as a whole did not play a significant role in the evolution of this [nuclear deterrence] strategy. The important work and thought was put in by senior officers of the Services, notably Slessor and the supporting scientists¹⁰⁹.

American attitudes only started to change after the British proved that they were serious about building up the strategic nuclear V-bomber force. Slessor had started that process. However, it would take a further five years after he left his position as CAS.

In 1951, the American JCS considered that the British nuclear deterrent force was a strategic irrelevance¹¹⁰. By 1956, both Valiant and Vulcan bombers were operational in Bomber Command. As the reality of Britain's nuclear deterrent drew closer, the USAF was becoming ever more interested in involvements through a joint nuclear strike force¹¹¹. In August, senior RAF and USAF officers agreed the terms of reference for a joint strike force at the ENCIRCLE conference in London¹¹². In September, Slessor wrote in *The Times* aviation supplement:

Now that the Anglo-American alliance is so close, and surely permanent, it only makes sense that we pool our resources... In the military sphere the present role of air

power is to gain time for the forces of sanity to assert themselves in the political and economic spheres'¹¹³.

By 1957, Britain reached the point when she could justifiably claim to have created a credible airborne nuclear deterrent¹¹⁴. All three versions of the V-force: the Valiant, Vulcan and Victor were operational. In addition, the GRAPPLE programme delivered Britain's first test of a hydrogen bomb, dropped by a Valiant, in May 1957¹¹⁵. The Anglo-American relationship improved significantly after Harold Macmillan replaced Anthony Eden as Prime Minister after the debacle of the Suez Crisis. Eisenhower and Macmillan met for high-level talks in Bermuda. Correspondence between Macmillan and Eisenhower reveal the approval of the supply of [American] nuclear bombs and release gear to the RAF under the designated Project 'E'¹¹⁶. Agreements were also reached for the resumption of U-2 AQUATONE reconnaissance flights from Britain which had been previously stopped by Eden in May 1956¹¹⁷.

Russia's launch of its *Sputnik 1* satellite in October 1957 was a positive game changer for the Anglo-American relationship. Baylis wrote: 'Ironically, it was the 'Sputnik' satellite which created the circumstances that finally transformed rhetoric [of closer Anglo-American cooperation] into reality'¹¹⁸. That event alerted the Americans that the Russians were ahead in Intercontinental Ballistic Missile (ICBM) development. They now felt vulnerable to a Russian thermonuclear missile attack. The news sent shockwaves through the American government, the military and the general public. At a meeting in late October Eisenhower informed Macmillan that the McMahon Act would be repealed, thereby opening the door for joint nuclear collaboration.

In June 1958, during a visit to Washington, Macmillan also managed to persuade Eisenhower to sign a new agreement on the employment of nuclear weapons in Britain to come under joint control¹¹⁹. Finally, a bilateral agreement entitled 'Cooperation on the Uses of Atomic Energy for Mutual Defence Purposes' was signed in July 1958. It enabled the finalisation of arrangements for the joint nuclear strike force. By November 1958, the V-force consisted of a front-line complement of 144 aircraft, of which 104 were Mark 2 Victors and Vulcans¹²⁰. It would eventually build to a peak 180 aircraft, with a front-line operational strength of 156 aircraft in June 1964¹²¹. These numbers were small compared to America's global SAC complement of nearly 1,700 bombers¹²². Despite this disproportionate ratio, the USAF senior air historian Alfred Goldberg wrote: 'The V-bombers added a new dimension to British military power. Comparable to the best American bombers, the B-52 and B-58, except in range, and superior in some respects, the V-bombers were eventually moulded into a small but élite strategic bombing force'¹²³.

Freedman commented that by the late 1950s 'the [British atomic and later hydrogen] bomb had come along, the V-bombers had come along, and we had influence on the Americans'¹²⁴. Young wrote: 'This larger political agenda had been laid out by Macmillan in July 1957'¹²⁵. At a defence committee meeting Macmillan stressed the need for Britain to:

Retain our special relationship with the United States and, through it, our influence in world affairs, and, especially, our right to have a voice in the final issue of peace or war [and] to enable us, by threatening to use our independent power, to secure United States cooperation in a situation in which their interests were less immediately threatened than our own¹²⁶.

All Slessor's original goals were finally achieved by late October 1958. By that time Britain had a fully operating, nuclear capable V-force which was integrated into the Anglo-American operational plan, agreement had been reached on a future joint control of nuclear weapons based in Britain, and the McMahon Act had been repealed. On hearing of the repeal of the McMahon Act Harold Macmillan wrote in his autobiography, *Riding the Storm*, that the 'great prize' had been achieved¹²⁷. In truth the 'great prize' was not just the repeal of the McMahon Act. It was the possession of the independent nuclear deterrent; the re-establishment of the Anglo-American 'special relationship' with the joint nuclear strike force; and, influence in global affairs. Slessor could justifiably have a claim on that 'great prize'.

Slessor's Legacy

Deterrence has been at the heart of military affairs for centuries: credible force can often deter a potential adversary. However, a deterrent force must be perceived to be credible. The adversary must also be convinced that deterrent force would be used, if it initiated aggression. Throughout the late 1940s, British politicians, scientists and military commanders continued to espouse a policy of nuclear deterrence, but without any clear plan and programme in place. Slessor's unique contribution to Britain's defence policy during the early Cold War years can be summed up in his ability to have moved the concept of nuclear deterrence from a theoretical aspiration to a defence policy that was based on credible and workable airborne nuclear deterrence. Would any alternative candidate for CAS in 1950 have achieved as much as Slessor? Such a candidate would need Slessor's special qualities of leadership, intellect, strategic vision, courage, and dogged persistence.

The facts discussed in this article reveal that senior politicians continued to doubt the wisdom of Slessor's plan to build up the V-force during his time as CAS. There was always a temptation for politicians of that time to cancel or delay the introduction of the revolutionary British strategic jet bombers during the continuing era post-war austerity. Slessor prevailed. Despite those challenges, the V-force build-up continued throughout the 1950s.

During 1952, Slessor succeeded in changing the British political and military mindset on strategic defence. The proposed build-up of large conventional forces in Europe to counter the Soviet threat was unrealistic and economically unachievable. Slessor's dominant role in the writing the Global Strategy Paper demonstrated his intellectual capabilities. He also showed character in articulating those new ideas to the American JCS, against their highly critical response. Inevitably, both the American political leadership and the JCS came to realise the cost-effective advantages of nuclear deterrence. They put in place a similar policy two years later with their 'New Look' programme.

Slessor had the vital quality of understanding the wider strategic context. On numerous occasions throughout his life, he continued to have the capacity to predict political and military outcomes. His prediction and warnings of the dangers of UN troops advancing into North Korea was only one example.

Slessor had a deep appreciation of the value of intelligence from all sources and the need for reliable coordinated intelligence. He had seen the positive results of reliable intelligence during later stages of the Second World War, notably during Operation STRANGLE in central Italy during early 1944 and later in Northwest Europe during the Transportation and Oil Plans of late 1944 and 1945¹²⁸. During his time as CAS he saw the urgent need for updated and reliable intelligence on key targets in the Western Soviet Union, particularly those that were a threat to Britain. His active involvement in the JU JITSU operation of April 1952 provided radar imagery of key Soviet long range air force bases. The operation also helped to strengthen the relationship between the RAF and USAF.

Despite the problems with the Anglo-American relationship at the political and diplomatic level, personal relationships between the RAF and the USAF senior commanders continued to be close and cordial. Those relationships improved considerably towards the end of 1952. In November, Slessor met Hoyt Vandenberg, his opposite number in the USAF. They both agreed on the importance of meeting and consulting on a more regular basis¹²⁹. The RAF/USAF relationship continued to improve after Slessor's time as CAS, culminating in the formation of joint Anglo-American nuclear strike force following the 1958 Mutual Defence Agreement¹³⁰. It is difficult to envision how, and if, Anglo-American nuclear cooperation might have evolved had the V-force not come into existence. Would the British have had access to America's submarine missile technology? After the cancellation of the ill-fated Skybolt project in 1962, President Kennedy offered Macmillan the alternative of participating in the Polaris missile programme¹³¹. This offer was taken up, and subsequently led to the current Trident programme. Slessor's legacy has extended over 60 years to the present day.

Notes

The article has been adapted from a dissertation undertaken as partial fulfilment for a Master's degree in Air Power: History, Theory, and Practice under the supervision of Air Commodore (Retd) Peter Gray, and completed in September 2016. The article focuses primarily on the influence and achievements of Sir John Slessor when he was CAS between January 1950 and December 1952. Sources marked TNA are from the National Archives, Kew.

¹ Sir Michael Howard, *Captain Professor* (London: Continuum, 2006), p.161.

² Air Chief Marshal Sir Michael Armitage, *The Royal Air Force* (2nd Edition), (London: Cassell), p.206.

³ Sir John Slessor, *The Central Blue* (London: Cassell, 1956), p.6.

⁴ Philip Meilinger, *Air War Theory and Practice* (London: Cass 2005), p.65.

⁵ John Slessor, *Air Power and Armies* (Oxford: Oxford University Press), p.200.

⁶ Meilinger, *Airwar*, 73.

⁷ Slessor, *Central Blue*, pp.339-365. American-British secret staff conversations held in Washington between January and March 1941.

⁸ *Ibid.*, 357. USAAF planned operating strength of 1,520 heavy and 1,059 medium bombers.

⁹ *Ibid.*, 327 and 358.

¹⁰ Slessor, *Central Blue*, p.446. The key differences at the Casablanca Conference related to the previously agreed 'Germany First' policy that was concluded at the December 1941 Arcadia conference. General Marshall and Admiral King were now looking for 'vigorous action in the Pacific', and would not tolerate American forces being inactive in Britain in anticipation of a delayed OVERLORD operation. Marshall considered a direct assault on France was preferable to the 'interminable operations in the Mediterranean'.

¹¹ Slessor family papers, Cheltenham, 2017, accessed by Air Vice-Marshal Tony Mason.

¹² Sir John Slessor, *The Great Deterrent*, (London: Cassell, 1957), p.78. From the 1948 lecture that gave an insight into Slessor's Anglo-American thinking 'it does not make sense to discuss British strategy except as part of a combined Anglo-American strategy'.

¹³ Sir Michael Howard 'Sir John Slessor and the Prevention of War' *Royal Air Force Historical Society*. Journal 19,(1999) p.131. Phillip Meilinger in *Paths of Heaven*, 71; *Air War Theory and Practice*, 73; and his foreword in Vincent Orange's *Slessor: Bomber Champion*, (London: Grub Street) p.10. Henry Probert *High Commanders of the Royal Air Force* (London: HMSO, 1991) p.45. Phillip Meilinger, *Paths of Heaven*, (Maxwell AFB, Alabama: Air University Press, 2001), p.71; 'The Historiography of Air Power: Theory and Doctrine' *Journal of Military History* Vol. 64, No. 2 (Apr. 2000), pp.467-501.

¹⁴ Sir Max Hastings in *The Dictionary of National Biography, 1971-1980* Lord Blake and C.S Nicholls (eds.) (Oxford: Oxford University Press, 1986) pp.782-784.

¹⁵ David Reynolds, 'A 'Special Relationship'? America, Britain and the International Order since the Second World War' *International Affairs*, Vol. 62, No. 1 (Winter, 1985-1986), p.1 Churchill popularised and perhaps coined the term 'special relationship' it in the winter of 1945-46.

¹⁶ Alfred Goldberg, 'The Atomic Origins of the British Nuclear Deterrent' *International Affairs* Vol. 40, No. 3 (Jul., 1964), p.413.

¹⁷ John Baylis, *Anglo-American Defence Relations, 1939-1980* (London: Macmillan, 1981) Appendix 1 and 3 respectively: The Quebec "Tube Alloys" Agreement, 19 August 1943 and Aide Mémoire of conversation between President and Prime Minister at Hyde Park, New York State, 19 September 1944.

¹⁸ Margaret Gowing, *Independence and Deterrence Britain and Atomic Energy, 1939-1952 Volume 1* (London: Macmillan, 1974), p.185.

¹⁹ TNA CAB 130/16 GEN 163 1st Meeting, 8 January 1947.

²⁰ TNA CAB 130/3 GEN 75/1 meeting, 28 August 1945.

²¹ TNA DEFE Tedder to COS Committee, 11 December 1947 and Gowing 'Independence and Deterrence' 160-240.

²² TNA AVIA 54/94 Design Branch Specification 'B35/46 Medium Range Bomber', January 1947.

²³ Andrew Pierre, *Nuclear Politics: the British Experience with an Independent Strategic Force, 1939-1970* (London: Oxford University Press), p.71. This was a re-introduction of the Ten-year

rule that was used in 1919, immediately after the First World War.

²⁴ TNA DEFE 20/1, TNA Chiefs of Staff to Elliot, 24 August 1951; Gowing, *Independence and Deterrence* Appendix 10: '“Declaration of Trust”, 13 June 1944', pp.393-401 and Appendix 9: 'The Anglo-American 'Modus Vivendi' 7 January 1948, pp.266-272. The Combined Development Trust: an Anglo-American agreement signed on 13 June 1944 to secure global supplies of uranium ore. Michael Warner, *The Collapse of Intelligence Support for Air Power, 1944-52: Two Steps Backward* (Washington D.C.: CIA, 2007), 3. Accessed 9 December 2015, <https://www.cia.gov/library/center-for-the-study-of-intelligence/csi>.

²⁵ Henry Probert, *High Commanders of the Royal Air Force* (London: HMSO, 1991), p.44.

²⁶ Major Corvin J Connolly, USAF, 'Marshal of the Royal Air Force Sir John Cotesworth Slessor and the Anglo-American Air Power Alliance, 1940-1945' Ph.D. Thesis (Texas A&M University, 2001) p.272. Accessed 12 May 2016 www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA399435; Sir John Slessor, *The Great Deterrent* (London : Cassell, 1957) pp.76 and 85.

²⁷ Slessor family papers, Cheltenham, 2017, via Air Vice-Marshal Tony Mason.

²⁸ TNA PREM 8/1383 COS(W)920 Slessor minute to COS 'The Possible Implications of the U.S. Atomic Air Plan' Paragraph 9, 27 January 1951.

The Russian Tu-4s, a reverse-engineered copy of the American B-29, had entered service with the Russian Long-Range Air Force in 1949. Known in the West with the NATO codename "Bull", the Tu-4 had the operational capability to attack British targets, possibly with atomic bombs, as early as 1950.

²⁹ Annual abstract of Statistics No. 93, HMSO, 1957 and Antony Seldon *Churchill's Indian Summer: The Conservative Government, 1951-1955* (London: Hodder and Stoughton, 1981), p.332.

³⁰ TNA AIR 75/23 Slessor to Secretary of State for Air, 1 January 1950. Paragraphs 1 and 3.

³¹ Paul Graham, 'RAF Nuclear Deterrence in the Cold War' *Royal Air Force Air Power Review*, Vol. 10 No. 1 (Spring 2007) pp.50-75.

³² King's College London, Liddell Hart Papers LH11/1949/10 personal communication between Liddell Hart and Air Marshal Sir George Pirie, AMSO, 15 March 1949.

³³ Peter Hudson (Air Council 1948-1951) in a lecture held at RAF Hendon, 11 April 2001 "The RAF and Nuclear Weapons, 1960-1998" published in the *Royal Air Force Historical Society Journal* 26 (2001) p.16.

³⁴ Alfred Goldberg, 'The Military Origins of the British Nuclear Deterrent' *International Affairs* 40, No.4 (Oct. 1964), p.613.

³⁵ TNA DEFE COS (50) 538 - note by CAS on "production of the B.9/48 jet bomber", 21 December, 1950.

³⁶ Robert Jackson *Men of Power* (Barnsley: Pen & Sword, 2006), p.155.

³⁷ AIR 8/1998 Churchill to Norman Brook, Secretary of State for Air, 17 January 1952.

³⁸ Jackson, *Men of Power*, p.156.

³⁹ Pierre, *Nuclear Politics*, p.89.

⁴⁰ Paul Graham, 'RAF Nuclear Deterrence', p.51.

⁴¹ Andrew Brookes, *V-Force: The History of Britain's Airborne Deterrent* (London: Jane's Publishing, 1982), p.67.

⁴² Charles Webster and Noble Frankland, *Strategic Air Offensive against Germany, 1939-1945 Vol I:*

Preparation, p.75.

⁴³ Graham 'Deterrence', 53.

⁴⁴ Brookes, *V-Force*, pp.135 and 143-145

⁴⁵ TNA AIR 75/117 Slessor to Alexander, Secretary of State for Defence, 3 October 1952.

⁴⁶ TNA AIR 75/58 Slessor to Trenchard, 3 October 1952.

⁴⁷ TNA AIR 75/117 Slessor to Churchill, 30/31 December 1952.

⁴⁸ Armitage, *The Royal Air Force*, 209.

⁴⁹ Ken Young, 'No Blank Cheque: Anglo-American (Mis)Understandings and the Use of the English Airbases' *The Journal of Military History*, Vol. 71, No. 4 (Oct, 2007), p.1139. Note: All assets and personnel of the USAAF were transferred to the newly instituted independent air force: The United States Air Force (the USAF) on 17 September 1947.

⁵⁰ Young, 'No Blank Cheque', p.1133.

⁵¹ TNA PREM 8/1383 COS(W)920 Slessor minute to COS 'The Possible Implications of the U.S. Atomic Air Plan' Paragraph 9, 27 January 1951.

⁵² *Hansard* HC Deb 28 March 1950 Vol. 473 cc 189-133, and HC Deb 15 February 1951 Vol. 484 cc 623-70.

⁵³ AIR 75/117 Slessor to Elliot BJSJ, Washington, 24 July 1950.

⁵⁴ TNA AIR 75/108 Slessor minute to C.I.G.S.: 'Policy following the enemy defeat in South Korea' 14 September 1950; DEFE 4/36, COS (50)160, confidential annex, 3 Oct. 1950; and COS (50)152: Appendix notes by Slessor.

⁵⁵ Alexander Shaw, 'We Have Just about had It: Jack Slessor, The Foreign Office, and the Anglo-American Strategic Debate over Escalation of the Korean War, 1950-51' *Yonsei Journal of Modern Conflicts* [Korea] Vol. 6 Issue 2 (Winter 2014), p.295.

⁵⁶ Max Hastings *The Korean War* (London: Pan, 2010), p.192.

⁵⁷ Peter Lowe, 'An Ally and a Recalcitrant General: Great Britain, Douglas MacArthur and the Korean War, 1950-1' *The English Historical Review*, Vol. 105, No. 416 (Jul., 1990), p.635.

⁵⁸ Truman Papers, White House Press Conference, 30 November 1950. Accessed 30 July 2016 <http://trumanlibrary.org/publicpapers/viewpapers.php?pid=985>.

⁵⁹ Cargill Hall, *Early Cold War Overflights*, p.1. and Young 'No Blank Cheque', p.1156- The term 'general war' was often used by American officers and officials to avoid using the words 'atomic war' because of the legal restrictions imposed by the McMahon Act.

⁶⁰ TNA DEFE 5/27 COS (51) 34, minutes of Slessor's meetings at the Pentagon, 15 January 1951.

⁶¹ TNA CAB 128/19, CM4 (5), Ernest Bevin to Cabinet, 18 January 1951.

⁶² Lowe, 'An Ally and a Recalcitrant General', p.632.

⁶³ TNA DEFE 20/1 'The U.S. Strategic Air Plan and Use of the Atomic Bomb' Paragraph 3, September 1951 and Young, 'No Blank Cheque' p.1148.

⁶⁴ *Ibid.*, 1145.

⁶⁵ TNA AIR 75/117 minute Elliot to Attlee (undated) and Young, 'No Blank Cheque', p.1149.

⁶⁶ TNA AIR 75/117 Chiefs of Staff to Tedder [BJSJ], 11 December 1950, also PREM 8/1383 Telegram, Tedder to MOD, 19 December 1950, and Telegram, MOD for Tedder, 22 December 1950.

⁶⁷ TNA DEFE 32/2 COS (51)106 'The U.S. Strategic Air Plan and Use of the Atomic Bomb'

September 1951.

⁶⁸ Young, 'No Blank Cheque' p.1151.

⁶⁹ John Baylis, 'The 1958 Anglo-American Mutual Defence Agreement: The Search for Nuclear Interdependence', *Journal of Strategic Studies*, 31:3, (2008), p.427.

⁷⁰ KV 2/2209 'Klaus Fuchs files' National Archive files online accessed 17 August 2016

<http://www.nationalarchives.gov.uk/releases/2007/march/atom.htm>.

⁷¹ TNA DEFE 20/1 'Summary of notes recorded by the secretary and deputy secretary of the JCS', 13 September 1951.

⁷² Sir John Slessor, *Great Deterrent*, London : Cassell, 1957) p.89.

⁷³ Jeffrey Record, 'Nuclear Deterrence, Preventive War, and Counter Proliferation' *Policy Analysis* No.519, (July 2004), p.14, accessed 26 July 2016 <http://www.cato.org/publications/policy-analysis/nuclear-deterrencepreventive-war-counterproliferation>.

⁷⁴ TNA AIR 75/107 Slessor letter to George F. Eliot, 18 October 1951.

⁷⁵ TNA DEFE 20/1, TNA Chiefs of Staff to Elliot, 24 August 1951.

⁷⁶ Ken Young, 'A Most Special Relationship: The Origins of Anglo-American Nuclear Strike Planning', *Journal of Cold War Studies* Vol. 9, No. 2, Spring 2007, pp.5–31.

⁷⁷ TNA DEFE 32/2 COS (51)741, p.14. and Sir Lawrence Freedman *The Evolution of Nuclear Strategy* (London: MacMillan, 1981) p.79.

⁷⁸ TNA AIR 75/120, 'Defence Policy and Global Strategy', report by the Chiefs of Staff, paragraphs 7,10,20, 21, 56, 92 and 139 (conclusions), 17 June 1952.

⁷⁹ Truman Papers "A Report to the National Security Council - NSC 68", April 1950 https://www.trumanlibrary.org/whistlestop/study_collections/coldwar/documents/pdf/10-1.pdf accessed on 1 February 2017 and Richard L. Kubler *Laying the Foundations: The Evolution of NATO in the 1950s* (Santa Monica CA:RAND, June 1990), pp 50-55. Accessed 30 July 2016 <https://www.rand.org/content/dam/rand/pubs/notes/2009/N3105>.

⁸⁰ Andrew Johnston, 'Mr Slessor goes to Washington: The Influence of the British Global Strategy Paper in the Eisenhower "New Look"' *Diplomatic History* Vol. 22, No. 3 (Summer 1998), p.364.

⁸¹ TNA AIR 75/94, JS 11, 24 November 1951.

⁸² TNA 75/120 Handwritten note by Slessor (undated) 'I was sent to sell it [the GSP] to the US JCS'.

⁸³ Lawrence Freedman, *The Evolution of Nuclear Strategy* (London: MacMillan, 1981), p.80.

⁸⁴ Johnston, 'Mr Slessor goes to Washington', p.379.

⁸⁵ TNA AIR 75/120 Slessor's presentation of the Global Strategy Paper to the Joint Chiefs of Staff, 29 July 1952.

⁸⁶ Johnston, 'Mr Slessor goes to Washington' p.379.

⁸⁷ Air Vice-Marshal Tony Mason, *Air Power: A Centennial Appraisal* (London: Brassey's, 1994), p.91.

⁸⁸ Charles V. Murphy, 'Defence and Strategy', *Fortune* (January 1953).

⁸⁹ Freedman, *Evolution of Nuclear Strategy*, p.81.

⁹⁰ Johnston, 'Mr Slessor goes to Washington', p.366.

⁹¹ Steven L. Rearden, *Council of War: A History of the Joint Chiefs of Staff, 1942-1991* (Washington DC: Joint History Office, 2012), pp.153-154.

⁹² Ibid., p.398.

⁹³ Ibid., p.366.

⁹⁴ Johnston, 'Mr Slessor goes to Washington' 366, also Baylis and Macmillan, 'British Global Strategy Paper' 221, and Slessor, *Great Deterrent*, p.145.

⁹⁵ Pierre, *Nuclear Politics*, p.87 and 308.

⁹⁶ John Baylis and Alan Macmillan, 'The British Global Strategy Paper of 1952' *Journal of Strategic Studies* Vol. 16 Issue 2 (1993) p.200.

⁹⁷ TNA AIR 2/21027 Tizard Committee to COS (45) 402(0), 16 June 1945.

⁹⁸ TNA AIR 2/12027, Slessor to VCAS, AMSO, AMT, 15 July 1945. Para. 5.

⁹⁹ AIR 75/92 Sir Frederick Morgan (Controller of Atomic Energy) to Slessor, 9 October 1951.

IMINT Image intelligence. Comprises visible spectrum photo-images [PHOTINT] but also imagery from other parts of the electromagnetic spectrum: radar and infra-red.

ELINT Non-communicative electronic intelligence: emissions such as radar or radio telemetry from the adversary's electronic devices.

SIGINT Signals intelligence: information comprising the adversary's communications.

¹⁰⁰ TNA AIR 14/3879 'RAF Benson Strategic Photographic Reconnaissance Conference', 4 October 1950. Only the PR 31/46, photoreconnaissance variant of the Canberra, could meet the criteria. It was still in the development phase, and, as discussed earlier, did not enter service with 540 Squadron until late 1952.

¹⁰¹ Peter B Gunn, *Sculthorpe: Secrecy and Stealth: A Norfolk Airfield in the Cold War* (Stroud: The History Press), p.64.

¹⁰² Cargill Hall, *Early Cold War Overflights*, p.3.

¹⁰³ Paul Lashmar, *Spy Flights of the Cold War* (Stroud: Sutton Publishing, 1996), p.42.

¹⁰⁴ Ibid., p.65.

¹⁰⁵ Gunn, *Sculthorpe: Secrecy and Stealth*, p.64.

¹⁰⁶ John Crampton, 'RB-45C Overflight Operations in the Royal Air Force' in Cargill Hall *Early Cold War Overflights*, p.153-163.

¹⁰⁷ TNA AIR 19/1126 Slessor sent the briefing note only to Churchill, Cherwell (Paymaster General) and Alexander (Minister of Defence) 'The Counter-Offensive against the Soviet Long-Range Bomber Force', 6 February 1952.

¹⁰⁸ Ibid., note on Ju Jitsu I, 22 February 1954.

¹⁰⁹ Seldon, *Churchill's Indian Summer*, p.334.

¹¹⁰ Stephen Ball, 'Military Nuclear Relations between the United States and Great Britain under the Terms of the McMahon Act, 1946-1958' *The Historical Journal*, Vol. 38, No. 2 (Jun., 1995), p.449.

¹¹¹ TNA AIR 20/11388 AVM Selway (BJSM) to AVM Earle, ACAS (Policy), 18 February 1956.

¹¹² TNA AIR 2/18093 'Encircle Conference', 8 August 1956, and Ken Young 'A Most Special Relationship: the Origins of Anglo-American Strike Planning' *Journal of Cold War Studies* 9 (2) (Spring 2007), p.14.

¹¹³ Slessor, *The Great Deterrent*, pp.259-260.

¹¹⁴ Alfred Goldberg, 'The Military Origins of the British Nuclear Deterrent', *International Affairs*, Vol.40, No.4 (Oct., 1964) p.612.

¹¹⁵ TNA AIR 20/10811 ‘“Grapple”: Value for future operations’, undated.

¹¹⁶ The Macmillan-Eisenhower Correspondence, 1957-69, E. Bruce Geelhoed and Anthony O. Edmonds (eds.) Macmillan to Eisenhower, 22 March 1957 Accessed 24 August 2016 <http://www.palgraveconnect.com/pc/doi/10.1057/9780230554825>.

¹¹⁷ TNA AIR 19/286 Selwyn Lloyd to Eden (PM) AQUATONE; U-2 Deployment to RAF Lakenheath, May 1956, and Appendix I for terminology.

¹¹⁸ Baylis, ‘Anglo-American Mutual Defence Agreement’, p.433.

¹¹⁹ *Ibid.*, 444.

¹²⁰ TNA AIR 2/18093 ‘V-force Operational Front Line Strength’ 18 November 1958.

¹²¹ Graham, ‘RAF Nuclear Deterrence in the Cold War’ p.67, Pierre, *Nuclear Politics*, p.156, and Brookes, *V-Force*, p.128.

¹²² Ken Young, ‘A Most Special Relationship: the Origins of Anglo-American Strike Planning’ *Journal of Cold War Studies* 9 (2) (Spring 2007) p.30.

¹²³ Alfred Goldberg, ‘Military Origins of the British Nuclear Deterrent’, p.617.

¹²⁴ Lawrence Freedman, ‘The Origins and Development of the Strategic Nuclear Deterrent Forces, 1945-1960’ at the RAF and Nuclear Weapons Seminar held at the RAF Museum, Hendon, 11 April 2001, published in the *Royal Air Force Historical Society Journal* Issue 11 (2001) p.56.

¹²⁵ Young, ‘A Most Special Relationship’ p.29.

¹²⁶ *Ibid.*, p.29.

¹²⁷ Harold Macmillan, *Riding the Storm*, (London: Macmillan, 1971), p.323.

¹²⁸ TNA AIR 75/88 ‘Influence of Air Power on Strategy, Old Sarum, August 1946, page 8, paragraph 3.

¹²⁹ AIR 75/72. Slessor’s meeting with Vandenberg, 24 November 1952.

¹³⁰ Baylis, ‘Anglo-American Mutual Defence Agreement’, p.446.

¹³¹ *Hansard* Prime Minister Harold Macmillan *HC Deb* 30 January 1963 vol 670 cc 955-1074.

Viewpoints

Reply to: The Battle of France, Bartholomew and Barratt: The Creation of Army Cooperation Command

By Dr Matthew Powell

Biography: Dr Matthew Powell has a PhD in Modern History from the University of Birmingham awarded in 2014. His thesis investigated the role of Army Co-operation Command in developing tactical air power in Britain during the Second World War . His first book, *The Development of British Tactical Air Power, 1940-1943: A History of Army Co-operation Command* was published by Palgrave Macmillan in 2016.

Abstract: Matthew Powell's article The Battle of France, Bartholomew and Barratt: The Creation of Army Cooperation Command, published in APR in Spring 2015, provoked a response from Greg Baughen whose viewpoint, published in APR in Spring 2016, gave an alternative insight to the investigations following the Battle of France, 1940. Greg Baughen sought to explain the War Office's frustration with the lack of appetite for Close Air Support shown by the Air Ministry, by examining and highlighting the tactical success of the Luftwaffe in 1940. Here Matthew Powell explains that the Air Ministry was equally frustrated at the War Office's lack of appreciation for the Operational and Strategic levels of war and their commitment to the Tactical.

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Introduction

I read with interest the viewpoint published in *Air Power Review* Volume 19 No 1 and its attempts to present an alternative viewpoint to the one I had taken in my article *The Battle of France, Barratt and Bartholomew* in a previous issue as well as for moving the debate on the impact of the Battle of France, 1940 on the development of tactical air power in Britain forward.

The viewpoint put forward by Mr. Baughen, much like the Bartholomew Report itself, however, puts forward a limited tactical level analysis that fails to take into account several important factors that had more of an effect on the outcome of this operation. That the British Army's focus was on the impact air power had had over the greater impact of the overall German operational way of war is correct as they had indeed not suffered as greatly at the hands of land-based power as France or Belgium. This focus, however, does highlight the narrow tactical level thinking of both the War Office and the author. The close support attacks conducted after the German success at Sedan only served to give greater tactical success to the *Wehrmacht*. Their operational and strategic success came through greater tactical speed and mobility, turning the tables on the situation that occurred during the First World War where it was operational speed and mobility that was superior and led, in part, to the trench warfare seen for the majority of the conflict. For the Allies, the Battle of France was already lost after the German breakthrough around Sedan where they were able to utilise this tactical speed and mobility to disorientate the slow and cumbersome command, control and communications (C³) system employed by the Allies and force them off balance as they drove across France. The Allies had little hope of reacting with any real force and the majority of the counter-attacks conducted were hastily planned and with few uncoordinated forces. The *Wehrmacht* were also able to take advantage of the Allied strategic plan to advance to the Dyle River. The C³ system of the Allies meant that they would never be able to react quickly enough to German thrust. This is further demonstrated by the fact the Allied air attacks on the decisive point around Sedan did not take place until a full three days after the initial assaults on the French defences. Where Allied air power may have had a decisive effect and turned the Battle of France in their favour was through the interdiction attacks on the German columns advancing through the Ardennes. These columns stretched almost as far as the German border. Attacks on these forces would have cut the advanced forces designated to carry out the attacks away from reserves and logistical support, cutting them off and rendering them unable to utilise their greater tactical firepower and mobility. These attacks, which the Air Officer Commanding-in-Chief British Air Forces in France, Air Marshal Sir Arthur Barratt, had requested permission to attack when they were first spotted. This was refused by the French High Command for fear of retaliatory attacks on French forces or civilians¹. The attacks on Belgian fortresses, whilst spectacularly successful and showing great operational imagination, also had no real decisive impact on the outcome of the Battle of France.

To now turn to the War Office and its attitudes towards air power, it must be borne in mind that they were in full agreement not only with the air support system utilised by the Royal Air

Force (RAF) in France, but also on the nature of the targets that were to be prioritised². These targets were to be interdiction rather than close support in nature. To then claim a lack of close support after the event is nothing if not a bit rich! The War Office were fully aware of the parlous state of the RAF's close support capabilities which is why they were in full agreement in September 1939. The British Army's thinking for the whole of the inter-war period, and indeed the majority of the First World War, is at fighting at the tactical level of war. This is why they see close air support as the panacea to any tactical problem they may encounter when in close contact with the enemy. They are unable, at this point in the Second World War, to conceive of fighting at the operational level and are unable to see the effects battlefield air interdiction can have on operations³. This is evident in the Bartholomew Report where the focus is simply on air power at the tactical level. The War Office sees close support as acting as 'flying artillery' to be awaiting their beck and call⁴. This lack of knowledge, not only about fighting at the operational level, but also of the fundamental principles of air power and its inherent speed and flexibility, means that they cannot see artillery controlled by an army commander is a much more effective tool at supporting ground forces than aircraft as far more firepower can be concentrated around a target for a far longer period of time than aircraft⁵. This is why the RAF were reluctant to aircraft being used in such a way. Resources that could be utilised to greater effect elsewhere would be wasted performing a role that could be done more effectively by resources already under the Army's control.

In terms of the fighting in France. The major reason why the *Luftwaffe* is able to direct its air campaign with more focus is due to the fact that, through the interdiction attacks conducted against Allied aircraft and aerodrome, they are able to gain at least localised air superiority around what they have decided is the decisive point of the entire operation, allowing them to act with impunity in the air against little to no opposition⁶. Air superiority is the crucial factor to success in any air operation and this is something that the War Office and Bartholomew are unable to understand⁷. This is made clear in the Bartholomew Report when to the committee members, air superiority is taken to mean a protective umbrella of fighters above the heads of ground forces protecting them. This is also what the report means by 'fly the flag': Friendly ground forces seeing aircraft supporting them. If Allied operations had been successful, it is highly doubtful that ground forces and their commanders would have complained about not seeing friendly aircraft in the skies. This is also why the RAF attempt to sweep the skies on enemy fighters⁸. Air superiority would provide far greater protection to ground forces than a protective umbrella and would also allow successful aerial operations to be conducted, as was the case in France from 1944 onwards when the Allies controlled the skies and the Germans made similar complaints⁹. Aircraft cannot be successful in any operation without relative control of the skies. In this the RAF and Air Ministry were more than correct to stick to their guns. This control of the air gives greater advantage to ground forces allowing them to act with greater freedom. This is why it is fought so bitterly for in the First World War.

The RAF's doctrinal publications also give greater insight into how the RAF view close support and interdiction and it is not the case that the RAF saw fifty miles as being a form of close

support¹⁰. This claim from an army officer appears to be an exaggeration in order to make a larger point about how the army itself sees air power. What the RAF is, however, is more discerning about when close support should be employed as they are aware of not only how difficult it would be to conduct without air superiority, but also the difficulties inherent in conducting impromptu air support and the dangers that it exposed both pilots and ground forces to¹¹. In its investigations the Air Ministry, it is true, did not call on a single army officer to give evidence. The reason for this is that the Air Ministry were not looking to analyse the British Army's fighting methods or doctrine. They were looking to investigate their own methods and organisations in order to establish what had and had not worked in order to improve their capabilities, which they undertake very quickly after France in the form of the Wann-Woodall experiments. The RAF realised that the key to improving their close support capabilities and developing a truly impromptu air support system, lay in communications and signals organisations and not necessarily in doctrine, aircraft, tactics or pilots. In this they were aided by their experiences in France through the use of the Allied Central Air Bureau (ACAB) and the air/ground communications formation 'Phantom' which sent tentacles out with forward formations to report back to the ACAB and allowed the RAF, at times, to receive information up to thirty hours before the French High Command¹².

Conclusion

The Battle of France was not won or lost due to superior or inferior capabilities in close air support, despite what is claimed in the Bartholomew Report. It was lost due to greater mobility and speed at the tactical level that gave a greater advantage at the operational level that allowed the *Wehrmacht* to achieve a strategic victory. This mobility and speed meant that the *Wehrmacht* were able to get inside the Allied OODA loop and it was from this that the Allied forces were never able to recover. The assault and subsequent breakout from Sedan was decisive at the operational level. The tactical air power attacks that followed the breakout, whilst decisive at the tactical level, were merely an afterthought as the Allies were never able to recover to be able to defeat the German advance at the operational level.

The War Office and British Army were unable to conceive of fighting at the operational level and saw the next operation against the Germans breaking down into a tactical level struggle just as the First World War had been. Due to this, they were unable to see how aircraft could aid them at any level of war aside from the tactical. This is why they continued to argue for an army air arm that was under their operational control and used simply to aid ground forces when faced with a tactical problem in the field. They were unable to perceive how isolating the battlefield could aid them in a contest at the tactical level for the majority of the Second World War. Isolating the battlefield would have the increased advantages of cutting enemy forces off from men and matériel support, meaning that once tactical success had been gained victory would be easier to achieve at the operational level. Once this had been achieved, aircraft could then conduct close support attacks with greater impunity to increase the decisiveness of any victory gained.

Notes

- ¹ TNA AIR 35/354 Barratt's Despatch, Part III: Work of BAFF Prior to Land Battle, July 1940.
- ² TNA WO 106/1597, Air Components for the BEF, France – Notes by CIGS on CAS's Memorandum on Arrangements for Bomber Support for the Allied Army in France, November 1939. TNA WO 190/435, Military Air Targets of an Army Nature, 18 May 1936.
- ³ This is dealt with in more detail in Matthew Powell, 'Re-discovering the Operational Level: Army Co-operation Command and Tactical Air Power Development in Britain, 1940-1943', *British Journal for Military History*, 2: 1 (November, 2015), pp.72-85.
- ⁴ TNA AIR 20/3706, Memorandum by Lieutenant-Colonel J.D. Woodall to GHQ Home Forces on Certain Problems in the Organisation of Close Support Bombing, 13 August 1940.
- ⁵ Ibid.
- ⁶ Paul Deichmann, *Spearhead for Blitzkrieg: Luftwaffe Operations in Support of the Army, 1939-1945* (Greenhill Books: London, 1996), p.106.
- ⁷ TNA AIR 10/5547, Air Historical Branch (AHB) Narrative Air Support, 1940.
- ⁸ TNA CAN 106/220, Bartholomew Committee Final Report, p.14, 1940.
- ⁹ Ian Gooderson, *Air Power at the Battlefield: Allied Close Air Support in Europe, 1943-45* (Frank Cass: Oxon and New York, 1997), p.35.
- ¹⁰ TNA AIR 10/1910, Royal Air Force War Manual, 1928. TNA AIR 10/1206, Manual of Combined Naval, Military and Air Operations, 1925.
- ¹¹ TNA AIR 10/1911, Royal Air Force War Manual Part I, 1935.
- ¹² TNA AIR 10/5547, AHB Narrative Air Support. TNA AIR 20/3706, Memorandum by Woodall to GHQ Home Forces, 13 August 1940.

Viewpoints

Towards Unification: The View from the Air

By Flight Lieutenant (Retd) Victoria Thorpe

Biography: Victoria Thorpe served in the RAF 2007-2016 as an Aerospace Battle Manager. During this time, she was privileged to work in numerous joint environments in the UK and abroad, including France, Germany, the Middle East and Afghanistan. She is currently fulfilling her passions for aviation and teaching as a Professor at the Inter American University of Puerto Rico, School of Aeronautics.

Abstract: Joint Force 2025 promotes the strengthening of interdependence between the Services of the British Armed Forces to increase overall capability. For the RAF, however, will increasing interdependence concomitantly reduce its independence? Or are interdependence and independence not mutually exclusive? Moreover, will being part of a more unified defence force improve or impede the RAF's ability to support future missions, joint or otherwise? To contribute to this emerging discussion this article examines historical debates, firstly, surrounding the significance of independence for air forces and, secondly, for and against unification from the air perspective. It concludes that there is great promise in the Joint Force 2025 concept with one notable caveat: that the RAF's role within it must be developed cognisant of the importance of valuing air power accurately.

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Introduction

Six years ago the *Future Character of Conflict* identified the need for ‘increasing interdependence’ between the British Armed Services, and ‘a more comprehensive or “super” joint approach’¹. It promoted a ‘systemic change that allows us to operate as one team’ to manage the increasingly unpredictable and challenging global security environment². The Levene Report published shortly afterwards similarly stated that, whilst the single Services:

‘are the rocks on which Defence is built...change is needed, and we are in no doubt that an increasingly unified Defence organisation can be better than the sum of its individual parts’³.

The Strategic Defence and Security Review (SDSR) 2015 therefore continues to promote the increasing unification of the British Armed Forces. ‘Joint Force 2025’ is the new paradigm towards which all the Services, and the relatively new Joint Forces Command, must now progress⁴. For some, this focus on an increasingly unified and interdependent organisation will be exciting, inspiring and satisfying. For others, it will be uncomfortable, threatening and concerning. All the Services will, however, be reflecting upon their role within this Joint Force. For the RAF this reflection will be important because, as the world’s first independent air force, its ethos is strongly rooted in its autonomy. Nearly 100 years after formation, the RAF continues to draw pride from an independent identity; personnel wear easily identifiable blue uniforms and ranks, the Service has its own Air Command and Chief of Air Staff to determine resource allocation and defend interests, and it inculcates ‘air-mindedness’ in all new recruits to underpin a strong esprit de corps⁵. Although SDSR 2015 underscores the joint nature of current and future operations, it is noteworthy that the RAF is currently supporting many missions solo. Will being a part of a more unified defence force therefore improve or impede the RAF’s ability to support future missions, joint or otherwise? To contribute to this emerging discussion this article examines some of the historical debates, firstly, surrounding the significance of independence for air forces and, secondly, for and against unification from the air perspective. It will conclude that there is great promise in the Joint Force 2025 concept with a notable caveat: that the RAF’s role within it must be developed cognisant of the importance of valuing air power accurately.

The independence paradigm

From the earliest air power theorists to present day academics, theories of how air power should best be harnessed have influenced the debate for and against independent air forces. In Britain the successes of the Royal Flying Corps and Royal Naval Air Service during the First World War underpinned Lord Smuts’ campaign for the establishment of the world’s first ‘Independent Air Force’⁶. Smuts noted that offensive air power might offer a strategic contribution in future conflict, stating that there was ‘absolutely no limit to the scale of its future independent war use’⁷. He consequently adjudged that air elements should be centrally coordinated by air personnel through their own chain-of-command, coequal to that of their

Army and Navy counterparts: 'the proper and indeed only possible arrangement is to establish one unified air service'⁸. Smuts was not alone in his faith in the power of independence. Sir Hugh Trenchard and Sir Frederick Sykes, the two primary contenders for Chief of Air Staff of the newly formed RAF, also argued persuasively in favour of the creation of an independent air force. The RAF was hence formed capable of not only supporting the other two Services, but also conducting independent offensive action above and beyond the traditional battlefield. The paradigm had been established.

This pioneering policy would be recognised and respected by many future air power advocates. Italian theorist Douhet, for example, asserted in 1921 that 'National defence can be assured only by an Independent Air Force of adequate power'⁹. Later during the Second World War, Land Commander Field Marshal Montgomery stated that to splinter air support between army formations would be disastrous: 'Nothing could be more fatal to successful results than to dissipate the air resources into small packets under command of Army formation commanders'¹⁰. His reasoning was that oversight of all air assets by one central impartial authority ensured efficient and effective prioritisation of air support for the land battle. The enduring popularity of Montgomery's maxim for the RAF is evidenced by the use of this quotation in fairly recent RAF Strategy¹¹. For the RAF, therefore, independence has been a core value for nearly a century, but this is not to say that independence has been unchallenged!

Challenges to Independence Theory

As early as 1917 theorists around the globe were presenting different conceptions of how air forces should operate. The American theorist Mitchell for example proposed a seemingly half-way solution - that an air force should be divided into two, with one element to support ground forces, the other to undertake 'strategical operations'¹². This perception was that air power had both independent potential *and* a joint-role to play, a bipolarity that Mitchell felt needed to be represented in force structure. By significant contrast, the U.S. Army Chief of Staff in 1918, Major General McAndrew, warned vehemently against the perils of giving the Air Force *any* autonomy, stating that Air Officers 'must be warned against any idea of independence'¹³. The debate in the U.S. lasted over 25 years before the pro-independence argument prevailed for the air force. Even then it succeeded perhaps only due to increasing support for air power's strategic potential for nuclear weapons projection¹⁴. Moreover, independence when granted was caveated, as the new independent air force operated from within a newly *unified* Department of Defense¹⁵. The U.S. therefore favoured alternative force structures to independence for a long time, and it was not alone in doing so.

Germany, for example, was prohibited from having an air force, or even aircraft, under the terms of Article 198 of the 1919 Treaty of Versailles. As a result, German air power was developed clandestinely throughout the 1920s, and it was not until 1933 that Germany even created an Air Ministry. It did so, moreover, under the direction of the army-dominated High Command. During the Second World War the Luftwaffe was hence influenced by army Generals who tended to prioritise air power's tactical capacity over its strategic potential¹⁶.

A positive result of this is that the Luftwaffe has been repeatedly commended for its world-leading tactical air support doctrine¹⁷. Japan also operated its air elements under Army and Navy authority during the Second World War, but impressively conducted some of the longest strategic bombing raids in history with these air forces. These raids demonstrated that air-autonomy was not a prerequisite for strategic success, provided that the value of air power in this regard was recognised by Army and Navy commanders. Not so successfully, France repeatedly subordinated its limited air elements to land commanders between 1920 and 1938, when it finally unified defence forces under a single Chief of Staff, General Gamelin. Tellingly this General was also the Chief of Staff of the Army and the French Air Force did not apparently have much influence during his tenure¹⁸. One historian has even suggested that so little money was spent on the French Air Force between the world wars that by 1938 it was 'seriously obsolescent'¹⁹. Modern day Latvia, by contrast, astutely operates a fully unified defence force in which the air element is just one department within a defence structure that includes a Joint department some ten times the size²⁰. This approach is inherently pragmatic for an air force of c.300 personnel. These divergent approaches demonstrate that there are a range of theories available to defence policy-makers considering the management of air power within an Armed Forces. It is significant, however, that the success of either an independent or subordinate air force is often determined by valuations of the utility of air power.

To unify or not to unify?

These valuations, however, naturally evolve as circumstances change, and some air forces have been subsumed into and liberated from unified defence forces, and some have experienced this repeatedly. Particularly illuminating for this article are some of the historical debates about whether or not to unify originally independent air forces with other Services. Arguments for and against unification have naturally tended to revolve around opposing beliefs that the process of unification will either improve or impede existing air forces' ability to operate. Notably, these debates have often been extremely emotive; during the unification of Canada's Armed Forces in the 1960s the officer-in-command, Rear-Admiral Landymore, spectacularly resigned as a result of his fears about the negative effects of unification. This article will therefore now examine the unification debate from both sides.

In favour of unification...

One principle expectation of unification is greater cohesion of forces with the imposition of unity of command. The recent British SDSR recommendation for 'Joint Force 2025' is, for example, the most recent in a number of government papers in support of this notion. The British Strategic Defence Review Green Paper of 2010 highlighted concerns that single Service culture actually impedes cooperation²¹. It consequently recommended an investigation into the successes of 'tri-service' or 'purple' enterprises with a view to seeing whether they 'should be taken further'²². The Levene Report also highlighted the issue that single-Service career management systems incentivise officers 'to put the interests of their Service over Defence as a whole'²³. It is therefore reasonable to suggest that a unified force would not suffer the same frictions. This assumption is not new; one commentator, Mark Watson, writing

in 1949 described the U.S. decision to unify its Armed Forces under a Secretary of State for Defense as the precursor to a 'welcome calm' following repeated inter-Service disputes²⁴. 'Unity of command' is therefore persistently central to the appeal of unification. As the historian Gosselin reflected on Canada's pre-unification Armed Forces, in independent mindsets each Service saw 'the threat it wished to see' and acted independently to counter it²⁵. Unification not only discourages this partisan behaviour, but it also takes the long established wisdom of revering 'unity of command' and structurally and culturally embodies it within an Armed Forces.

Pro-Unification voices also promote the concept's cost-benefits. Unification should theoretically reduce the costs associated with maintaining several Services, as duplication of effort is eradicated and Service rivalries are overcome in favour of overall defence output. As the Levene Report asserts, one issue with separate Services is that they tend 'to favour capabilities they consider to be core to their outputs'²⁶. This can result in a force that is incorrectly balanced or inefficiently resourced for actual defence needs. The U.S. Armed Forces, for instance, despite unification in 1947, carried three different anti-aircraft system projects into the 1950s, each developed by a different Service²⁷. This was because single Service mindsets survived unification. Indeed, for the air force these mindsets ironically began with unification! As George Fielding explained in 1946, defence unification ironically *guaranteed* liberties for the U.S. Air Force. He saw unification as an opportunity to free the air force from army subordination by establishing an Air HQ and budget as part of a larger unified structure²⁸. Even structural unification cannot therefore ensure cultural unification, and the latter is arguably how a whole force starts to generate anticipated cost-savings.

Those in favour of unification are not wrong, however, to cite efficiency as a strong argument in favour of denouncing the single Service concept. The U.S. National Security Act (NSA) of 1947 acknowledged this very principle and resulted in a number of physical consolidations within the Armed Forces. These included the merger of two air transport, two sea transport, two rail transport, medical, recruiting, printing and machine repair services²⁹. These consolidations did save money, although even the contemporary Watson cautioned that fiscal savings should not be a primary motive for unification, as they will be in 'respectable but not staggering amounts'³⁰. The Levene Report echoes the NSA principles of greater efficiency nonetheless by asserting that 'there are some capabilities or functions currently undertaken in the single Services which might better be conducted on a joint basis'³¹. The aspiration towards Joint Force 2025 should be seen as further progression in this regard.

Also central to the reorganisation of any armed force is the necessity to maintain or improve civilian control, and unification is one way this can be achieved. Samuel Huntingdon asserted in 1957 that to maximise the professionalism of an officer corps it is necessary to isolate them from politics³². Proponents of unification hence argue that by reducing the officer corps' access to government, and channelling issues and direction through one central defence headquarters, the wider Armed Forces can be left to develop a strong professional ethos

unfettered by competition for resources and political favour. This also enables the reinforcement of civilian control of the Armed Forces by necessitating that all military orders are received via a single defence representative. This gives the military less freedom for interpretation. Unification can therefore be used to sever unhealthy politico-military connections and re-establish civilian authority. Canada's decision to unify its armed forces in the 1960s was certainly influenced by this. Following the Cuban Missile Crisis, during which the world teetered on the brink of nuclear war, Canadian politicians discovered that their Naval and Air Force commanders had increased nuclear readiness states without permission³³. The unification debate that ensued has hence been described as the symptom of a 'crisis in Canadian civil-military relations'³⁴. The 1964 decision to subordinate all military elements to a Chief of Defence Staff that answered directly to the Minister of Defence was intended to restore political authority and repair the civil-military relationship³⁵. It was also the first major step towards the creation of a fully unified defence force. (Interestingly this measure to channel ministerial communication via a single Chief of Defence Staff was also taken in Britain as a result of SDSR 2010, but this author hopes not for the same reasons!).

According to these arguments, the impact of unification should therefore be largely positive; unification does not necessarily mean the abandonment of Service identities but the elimination of competition between them, thereby improving cooperation and camaraderie between all elements. Wasteful use of resources, such as duplication of effort and development projects, should also be a positive consequence, freeing up more resources that can then be intelligently re-allocated. Provided an air force is valued within a defence force there is no reason why it should not be apportioned its fair share of the overall defence budget and procurement attentions. As the creation of the U.S. Air Force demonstrated, the case for unification can also be a very positive step towards acknowledging an air force's co-equal status with other Services. Finally, it may also help build a stronger civil-military relationship.

Against unification...

The case for unification has, however, often had a frosty reception, especially from serving personnel, and not without due cause. The complete unification of the Canadian Armed Forces in 1968, for example, was a disaster. Fifteen years after the event a profile for *Conflict Studies* described 'dismay among Canada's allies at the state of her armed forces'³⁶. The same study also worryingly perceived the situation to be in decline rather than recovery, noting 'a growing gap between Canadian defence commitments ... and her ability to fulfil them'³⁷. Yet Hellyer, the original driving-force behind the unification, had been confident that 'the demands of modern warfare are such that commanders and staff down to the lowest level of operation and the support echelons must act together and in unison'³⁸. His expectation was that 'a single organisation which works and thinks together' would achieve this more robustly than 'the three service system of coordinating combined operations'³⁹. In practice this actually meant the effective disestablishment of the Air Force. Described from within as 'the worst hit', the air force was split across six new commands, stripped of its HQ and lacking aircraft capable of performing its strategic obligations⁴⁰. Not surprisingly, personnel were extremely demoralised.

The spectre of unification also prompts fears regarding the conceptual health of a force. As recently as December 2012, for instance, the RAF released a bespoke narrative underscoring the importance of remaining an independent air force⁴¹. It underscored the continuing validity of the Smuts Report's conclusions and the legacy of Lord Trenchard's vision for a specialist air service, and asserted that the unique quality of 'air-mindedness' in all air personnel is essential to the maintenance of UK security. This narrative emphasised pride in specialisation, an argument that has been used to counsel against unification for years. As George Fielding demonstrated in his discussion about the proposed merger of the U.S. Armed Forces after the Second World War: 'it is clear ... that each Service – army, navy, air – develops most successfully under its own autonomous organisation'⁴². Autonomy arguably focuses intellect and creativity for the benefit of each Service. Unification is consequently undesirable because it might inhibit both the intellectual development and implementation of air power.

There are also concerns that unification might eliminate healthy competition between Services, or may result in one Service dominating the whole force's activities. Vice Admiral Radford opposed the unification of the U.S. Armed Forces in 1946 for this reason. He argued that when armed forces merged, the Army as the largest element tended to dominate military endeavours and thinking. Vice Admiral Radford controversially argued that army-dominance fosters unfettered militarism with dire consequences – he blamed the unification of armed forces in Germany, Japan and France (under Napoleon), for example, for their dangerous embracement of totalitarianism and militaristic culture⁴³. He consequently argued that unity of effort and purpose can and should be achieved without structural or functional unity⁴⁴. Central to his concerns was that unification would result in the likelihood that individual Services would have to sacrifice funding or resources to develop another Service's assets or capabilities. Not merely competition, he argued, the deeper concern was that the Service making the sacrifice may not be able to undertake the security responsibilities it had traditionally met. Admiral Nimitz echoed these concerns for the U.S. Navy in 1946:

'Unification can have one of two effects on the Navy. Either it will retain a sufficient degree of autonomy and prestige to enable it to discharge its mission effectively, in which case it might as well remain a separate service as it now is; or it will not do so, in which case it may sink to secondary status and the nation may lose command of the sea'⁴⁵.

A similar statement might as easily have been said by senior air staff with reference to command of the air. Opposition to unification thus often rests upon fears for the future of a Service and the ability of that Service to continue its traditional role. For an air force, unification is particularly concerning because the independent and strategic potential of air may be undermined if unification results in a land-dominated force principally concerned with air power's capacity to support the land battle.

Unification is also a concern for military personnel at all levels. Although it is imposed 'from above', success depends upon acceptance by the whole military force. Herein lies one of the

most intangible issues with unification – the emotional and cognitive dimensions. Many of the arguments in favour of unification are logical and well-reasoned, but a principle objection to the concept arises from the anticipated inertia of Service personnel to emotionally accept the new system. This inertia, borne of pre-existing Service loyalties and historical or shared experiences, may prevent personnel from adopting a new and possibly radical 'united' ethos. The U.S. Armed Forces, for example, in the early days following unification, struggled to inculcate a joint ethos. Despite the inauguration of the unified force in the late-1940s, Service divisions were still keenly felt by the officer corps well into the 1950s. A study of officers' attitudes in 1955 revealed that Service loyalties were still fierce at Service headquarters⁴⁶. These loyalties diminished at Joint Staff headquarters and further declined at the Office of the Secretary of Defense⁴⁷. Exposure to a joint environment and shared experiences evidently lessened Service loyalties, but even in the 1980s the issue of inter-Service rivalry was still problematic. This is evidenced by the Goldwater-Nichols Act of 1986, which mitigated some of the effects of these rivalries by removing the Service chiefs from the operational chain of command.

Those opposed to unification may therefore argue that it jeopardises an air force's ability to function, develop and thrive. It may result in necessary sacrifices of funding and resources to other elements, and may even threaten the air force with domination by another larger Service. It may also destroy existing cohesion and prosperity by stripping the air force of its unique air-mindedness, or overwriting its ethos and heritage with a new, less mature ethos and culture. This in the worst instance may interfere with an air force's ability to project power and influence from the air, as personnel lose air-mindedness, pride in specialisation and morale. Indeed, unification may not take root at all, as personnel may cling onto old ideals that hamper the development of the new unified force.

Conclusion

By examining some historical debates for and against both independence and unification, this article has highlighted two contrasting outlooks for the RAF over the next decade as it finds its place in Joint Force 2025. These outlooks very much depend upon which side of the debate you support. Proponents of unification might suggest that increasing 'jointery' will have a positive influence on the defence community by eliminating Service competition, guaranteeing funding and resources where they are needed, and improving overall force cohesion. By contrast, opponents of unification may argue that the potential for air power to be undervalued in a unified force makes the air force vulnerable to funding shortfalls, resource cuts and intellectual suffocation. A subsequent loss of direction, morale and conceptual cohesion would likely undermine its overall fighting power. The fate of an air force in a unified force appears to rest precipitously upon the perception of the value of air power within that force. When defence priorities change it is axiomatic that the role of air power within the Armed Forces should be re-examined; if there is a disconnect between the perception of an air force's purpose and the way it is commanded and resourced, it will be ill-equipped to respond to crises as required. This is true of both an independent air force and air elements

within unified armed forces. A key conclusion to be drawn from both sides of both debates is, therefore, that the future of the RAF within the more unified Joint Force 2025 will be profoundly influenced by the dominant valuation of its worth.

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Viewpoints

Staying Relevant? The Future Utility of Air Power

By Group Captain (Retd) Clive Blount

Biography: Group Captain (Retd) Clive Blount qualified as a navigator in 1985 and accumulated 2,500 hrs on the Tornado GR1 and ten other types. A graduate of the RAF CFS, Aerosystems Course, ACSC, and the USAF Grand Strategy Program he recently concluded his wide-ranging operational career as the Assistant Head of Air and Space with the UK's Development, Concepts and Doctrine Centre. He is also a CAS' Fellow with a Master of Philosophy in International Relations from the University of Cambridge.

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Introduction

If there is, or indeed can be, such a thing as the ‘western way of war’, it has been characterised in the last few decades by the use of technology to replace bloodshed. Strategies have sought to tackle threats at range and, where possible, substitute systems and firepower for the loss of friendly troops. Technology has also allowed hitherto unprecedented situational awareness and a high degree of precision. Prosecuting the right target, however fleeting its exposure, in time and with minimal ‘collateral’ damage has become not only an achievable aim, but a concrete standard that is expected of western forces by the voting public in whose name they carry out the war. The downside to this supremacy is that public uproar accompanies mistakes on the battlefield, there is close scrutiny of armed forces’ behaviour, and strategic decision-makers have at least one eye on the domestic implications for tactical and operational action.

Potential adversaries will be, of course, fully aware of the above factors. They have studied recent conflicts and would have been particularly naïve if they did not draw the simple conclusion that allowing western forces access to, and freedom of action within, their operating area is likely to lead to one conclusion – they will lose, and lose rapidly. They are, therefore, unlikely to play to our strengths to let this happen. The 1990s/2000s saw renewed emphasis placed on Counter-insurgency (COIN) – with the rise of the ‘COINdinstas’ and much academic discussion on the, so-called, ‘asymmetric’ warfare adopted by the various insurgent enemies whom we faced at the time¹. However, it is perhaps a slight western arrogance to think that an adversary would ever adopt *symmetric* warfare – why would any enemy counter strength with strength? Insurgent warfare throughout history has been a story of the underdog employing innovative techniques in an attempt to counter a militarily superior foe. Why should potential modern *state* adversaries, however sophisticated, not adopt a similar philosophy? How can western militaries maintain their edge in the face of emerging innovation?

I will therefore examine modern warfare from an adversary’s point of view and look in more detail at the so-called ‘hybrid strategy’ that appears to be emerging. I will suggest that we need to take a different view of force development and will propose attributes that will give future air power utility against emerging threats.

Starting in the 1990s, Chinese military authorities, in the face of seemingly superior American forces in the Pacific, developed a philosophy to prevent the US from using their superior technology by exploiting surprise, by attacking the US dependence on sophisticated communications networks, and by keeping US forces at ‘arms length’². The latter was achieved by what has become known as an ‘Anti-Access/Area Denial’ approach (A2AD). The Anti-Access pillar aimed to hold US forward bases at risk, threatening potential US allies who may offer basing options by fielding large numbers of ballistic and cruise missiles and strike aircraft; the Area-Denial pillar aimed to limit US freedom of action, in particular on the high seas, threatening the US carrier groups with submarines and terminally guided ballistic missiles (amongst other systems). The A2AD philosophy has been seen to spread and recent years have

seen the proliferation of sophisticated surface-to-air missile systems, warning and control technology, ballistic and cruise missiles and, of course cyberwarfare capabilities. A2AD is, essentially an operational level technique, and some would say (particularly older 'cold war warriors') that the use of sophisticated Integrated Air Defence Systems (IADS) and attacks on the home base are not particularly innovative, but if an adversary were to adopt an A2AD philosophy at the *strategic* level, the west would be faced with an extremely demanding challenge to its military superiority. Essentially, what better way to prevent the West bringing its superior hard power to bear than to prevent it deploying in the first place – by dissuading the nations from going to war? We have seen trends in both Ukraine and Syria/Iraq that suggest future adversaries may well be developing this line of thinking. Emerging strategies that seek to act in this manner utilise all the levers of power available to decision-makers and have become known as 'gray zone' or 'hybrid' strategies³.

So, how do these so-called hybrid strategies work ... and why are they so effective against western democracies? To answer these questions we must turn to the fundamental properties and values of our society. We are, and will hopefully remain, an open, liberal democracy and we tend to ally with those who share our values – and, again hopefully, this will continue notwithstanding recent electoral upsets. At the strategic level, the very nature of our society makes plain certain 'weaknesses' that may open us to manipulation by a devious adversary. Before analysing these factors, it must be emphasised that, although referred to here as 'weaknesses' - in that they provide points for enemy exploitation - these factors are fundamental to the very core of a democratic society ... every care must be taken when attempting to address them directly in order not to lose the freedom, transparency and democratic process that they represent, and form the core of our way of life. So, in more detail;

- We have an open society. Our politicians are accountable, our citizenry has a say. The domestic agenda and the views of the electorate will always be in the mind of our political leaders, if they wish to serve longer than the minimum term.
- There is now wide access to internet-enabled media/social networks etc that enables rapid political impact – essentially, in classical terms; we have empowerment of the 'mob'. Access to the internet also enables its use as a tool to wield influence, particularly by the dissemination of propaganda and contrasting narratives – the 'mob' can be easily manipulated.
- We want to be 'on the side of the angels.' We espouse and value legal norms; we wish our actions to be considered legitimate; and we value the institutions and mores of the liberal world order. When we take action we would prefer to build alliances or coalitions to underpin and strengthen our perceived legitimacy.

All three areas can provide entry points to an adversary who wishes to attack the nation's will to engage in conflict. Thucydides suggested that a nation resorts to force for reasons of Fear,

Honour, or Interest⁴, and a clever hybrid strategy would aim to use subversion and manipulation to undermine these three reasons, both complicating decision-makers' calculus and confusing the voting public. Fear and interest were played against each other, for instance, in the 2005 Madrid train bombing – were Spain's interests served by taking part in the coalition campaign in Iraq worth exposing the Spanish population to the fear of violent attack? Clearly the Spanish government at the time thought not. More recently, votes in our own parliament on air strikes in Syria (2013/2015) have clearly restrained leaders and driven national strategy. Extending this into the future, would every NATO country be capable of convincing their terrified populations that the risk of war with Russia arising from solidarity over the Baltic States was in their interest? NATO solidarity would thus provide a clear target for 'hybrid' assault. Now, granted, such subversion has a long history in warfare – one only has to consider the German-engineered 'injection' of Lenin, via a sealed train from exile in Switzerland, into the febrile environment of revolutionary Russia and the subsequent cataclysm, to be convinced of how effective such techniques can be⁵ – but today's interconnected society, and the rapidity by which information and opinion (and rumour and disinformation) can be disseminated, makes such actions more immediate, potentially easier, and 'tuneable' to achieve a range of effects. Emerging reporting about Russian interference in the recent US presidential election appears to demonstrate just how serious, and potentially insidious, these effects can be. So, in the future, embattled democratic governments will be faced with a battle of narratives and multiple 'truths', not only having to devise a strategy to defeat an enemy but also to maintain the support of allies and their own public, defend their legitimacy and to make sense of a confused, deliberately obfuscated and rapidly changing environment. Carl Von Clausewitz's dictum that war is an extension of policy is clearly key to this analysis - to be 'useful', war (and by extension military power) has to provide options and choices for policy makers and leaders⁶. The issue for us then is whether we, as purveyors of 'traditional' military power, can remain relevant. What can/must air power bring to the embattled future decision-maker faced by such a strategy?

First we must consider the actual nature of future war. Clausewitz's 'trinity' describing the eternal nature of war has stood the test of time well regardless of the type of action in which we have been engaged: Violence and enmity; Fog, Friction and the play of chance; and the Subordination of force to Policy, to varying degrees, have all characterised war. But, as Clausewitz also said, war changes its characteristics like a chameleon to meet a given case⁷. Much has been written about the nature of future conflict, particularly by the MOD's own futures think tank at DCDC, Shrivenham, but there is little to suggest that the 'trinity' will not continue to apply. Indeed, hybrid strategies deliberately seek to manipulate Clausewitz's elements and play them against each other – playing up hatred, undermining policy, obfuscating the picture, for instance. The one thing that is clear is another of Clausewitz's truisms that war is a '...collision of two living forces... [the enemy] dictates to me as much as I dictate to him'⁸, to paraphrase – the enemy has a vote.

In a future conflict, against a clever adversary, it is clear, therefore that we must strive to provide military options that are flexible and adaptable to meet an ever-changing threat. Air power is to

a large degree unique in the range and flexibility of options it currently provides to our leaders. It can deploy rapidly, it has long reach, its effects can be scaled up or down as the situation requires, it is precise, it can be devastating, but it also can deliver effects across the entire spectrum of conflict. The challenge in developing a future force structure is ensuring that these unique attributes of air power remain relevant and, equally importantly, that it can continue to deliver. Whilst force planners have historically concentrated on numbers and technological capability, in future these measures, whilst still important, may be secondary in defining the strategic utility of air power – how useful air power will be to decision-makers. I therefore now suggest three alternative measures of utility.

As decision-makers are pondering strategy, air power must be **Available**. If air power is to be useful, it has to be able to get to the right place, in a contested environment, and be capable of delivering an appropriate effect where it is needed. As previously discussed, successive adversaries have seen that if they allow western air power into their operating area, they are likely to lose (well, they will certainly be prevented from continuing a 'conventional' campaign). Advances in C4ISTAR, precision and persistence have enabled the west a degree of dominance in the conventional battlespace ... adversaries know this and will seek to prevent western forces from operating in their preferred manner. Nevertheless, clearly, the traditional air power focus on technological advances is important in maintaining any edge. Counter A2AD technologies such as hypersonics and stealth will play a part, but it is important to think about the problem more widely, embracing such innovations as operationally responsive space, high altitude pseudosatellites (HAPS), such as the Zephyr system operating in the stratosphere in a new way⁹, and concepts such as swarming and manned/unmanned teaming. The other aspect of availability is that of reach; it is likely that basing of air power assets will remain a conundrum for future planners. Bases will become increasingly vulnerable under the A2AD paradigm and the persistent global defence engagement required to maintain access, basing and overflight permissions across the world will be vital. Air power's role in maintaining this engagement, with its ability to deploy rapidly with a small logistics footprint, and as a showcase of western technological and manufacturing prowess should not be underestimated. The partnerships and alliances formed by this global engagement are likely to be, however, major targets for any adversary using a hybrid strategy; nurturing such relationships is likely to be a strategically vital task, making the elevation of the importance of defence engagement in the recent SDSR extremely timely¹⁰.

The next measure of utility is that air power must be **Affordable**. Short of a clear, existential threat to the nation, most democracies will always be faced with the continuing 'guns or butter' dilemma. There will always be many calls on limited budgets, so air power must represent good 'value for money' to the taxpayer. However, as the complexity of modern air platforms increases, so does the cost and thus the pressure to keep numbers of platforms to an absolute minimum. Force planners are faced with a dilemma – what is the optimum balance between quantity and capability? Traditionally in the combat air power arena, quality has won out, but with future fleets of combat aircraft potentially costing in the many 100s of millions of dollars,

can this remain the case¹¹. With many calls on military power, there is a certain irreducible mass, so sooner or later a trade-off between mass and quality is inevitable. Simplifying the debate to almost absurd levels, there is an equation that reads 'One F22=X times F35=Y times Typhoon=Z times Hawk' ... and so on. What is the optimum balance? A force of simple aircraft will clearly not survive night one of a war against a peer competitor but a small number of highly capable platforms may be insufficient to deal with a myriad of tasks across the spectrum of potential conflict. As cost rises we also have to consider the rather sobering question of whether we can afford, or indeed, survive the loss of expensive platforms – especially in the connected democratic society mentioned at the beginning of the article. Loss of a significant, valuable or rare platform provides an immediate 'way in' for hybrid strategy, public opinion will be ripe for a manipulated narrative, and of course, even if the public approves the money, the chances of building replacements for today's exquisite technology, in time, are rare.

This example of the impact of public opinion leads to the third measure of utility. Air power must be **Acceptable**. Whilst the technical capability to strike targets at range with precision is important from a military perspective, in the court of public opinion discrimination and the avoidance of innocent casualties is vital. Again, in the era of the hybrid adversary, we can expect civilian casualty incidents to be exploited, and most likely fabricated, so the ability to make sense of a difficult, confused situation and to reassure leaders and populations of the efficacy and legitimacy of air power actions will be increasingly important. Sophisticated *ISTAR*, durable communication systems and a range of available effects will all underpin the utility of power. Fog, friction and chance will not go away, but we must continue to develop our ability to provide decision-makers with a clear picture, reliable communication, and precision of effect and its delivery. We have to strive to uphold our stated values and prevent an enemy exploiting disinformation or confusion. The remote nature of air power above the messy surface battle gives rise to some of its more durable and desirable qualities, however, it also plays to a narrative of remote and indiscriminate killing – the so-called 'playstation mentality'. Clearly, putting human beings at risk unnecessarily is also morally questionable but, in the battle for the narrative that is future warfare the ethical and moral aspects of remote must be clearly understood *and communicated* if air power is not to be unreasonably constrained.

War is, as Clausewitz says, '... not the action of a living force upon a lifeless mass ... but always the collision of two living forces'¹². Future adversaries, chastened by western technological superiority, are likely to adopt so-called hybrid strategies to prevent democratic nations from bringing their might to bear in conventional conflict. Subversion, obfuscation and A2AD approaches will be used to dissuade western nations and alliances from entering conflict and threatening their interests. The vulnerabilities engendered by the very nature of democracy, emphasised by the interconnected and open nature of democratic societies leave them open to manipulation and confusion. It is likely that conflict will remain defined by Clausewitz's 'trinity' of violence and enmity; fog, friction and the play of chance; and the subordination of force to policy, but this article has suggested that force planners will need to look at the utility of force in a different way from the traditional lenses of mass and technical capability

if air power is to remain relevant. Decision-makers must be presented with air power options that are, in addition, available, affordable and acceptable. In summary, whilst much of the debate about the future of air power is centred on the highly technical challenge of future general war against a peer competitor, I would argue that, whilst it is important to strive to develop capabilities to fight in this scenario, our biggest future challenge will be in remaining relevant and useful to our leaders in the run up to conflict, and hopefully in the prevention of peer competition.

Notes

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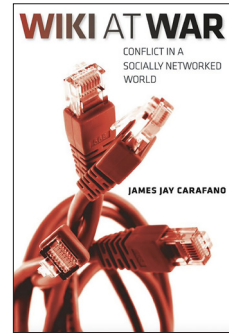
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Book Reviews

Wiki at War: Conflict in a Socially Networked World



By James Jay Carafano

Publisher: Texas A&M University (ISBN: 978-1-60344-656-3), 326 pages

Reviewed by Squadron Leader Paul Withers

Biography: Squadron Leader Paul Withers is an Engineer Officer, currently employed as an Officer Career Manager at Headquarters Air Command. He has professional experience and expertise in cyberspace operations, having served at Joint Cyber Unit (Cheltenham), and was embedded with US Cyber Command in Afghanistan. A CAS' Fellow, with an MA from King's College London, he is currently undertaking a MSc in Cyberspace Operations with Cranfield University.

Introduction

The ever-expanding breadth of cyberspace literature has opened an important and vibrant debate among theorists and practitioners regarding the implications of operating within this man-made environment. Much of the focus has been on the technology of cyberspace and, in particular, the threats and opportunities that arise from rapid technological development. This becomes an increasingly relevant debate, as the imminent delivery of the first 5th Generation air platforms necessitates a shift in the integration of Air and Cyberspace. However, cyberspace is not just a technological challenge, but one that requires us to make sense of how people and processes interact with technology. In *Wiki at War* Carafano aims to help us understand what a socially networked world means for future conflict.

James Jay Carafano specialises in national security and foreign policy at the US think-tank, The Heritage Foundation. He is a former US Army Officer and has a PhD from Georgetown University. He highlights that in war through the ages, there has always been an advantage for the side that can seize the physical high ground. In writing this book, Carafano's objective is to

“understand how dynamic the relationship between social networks and war is likely to become – and what a difficult task seizing and holding the electronic high ground is likely to be” (p.11). The title suggests an emphasis on ‘wikis’, from the Hawaiian word meaning ‘very quick’. Wiki software underpins a quick and easy means of posting interlinked web content; the most well known example is the now ubiquitous *Wikipedia*. However, the catchy title masks a far broader examination of social networks that cuts across many technologies and social groups.

The scope of the book is particularly wide-ranging. In a prologue labelled ‘Mad Scientists and Fighter Pilot’, the author starts by drawing unlikely parallels between the work of Colonel John Boyd and the controversial ‘obedience experiments’ conducted by psychologist Stanley Milgram. He moves onto an examination of the history of social networking, with a focus on the importance of language and social gatherings, the revolutionary effect of print, the telegraph and broadcast media. This sets the scene for a discussion of the impact of the digital revolution that has enabled street journalism, activism and information warfare. He cites the interesting case study of social media empowering democracy protesters during the 2009 Iranian elections, and the corresponding Iranian regime efforts to subvert the protesters’ online activity. A recurring theme in the book is the observation that social networking behaviours conform to a ‘power law’ curve, rather than a ‘normal’ or Gaussian distribution, i.e. “in big groups online, a handful of people make all the noise” (p.9).

Whilst Carafano does refer to some existing social media platforms, it is patently not a ‘how-to guide’ for particular social media applications. Indeed, he argues that the rapid evolution of technology means that it would be a mistake to pin our understanding of social networks on a particular existing technology. He does, however, provide simple explanations of some of the underpinning technological developments from the first programmable computers, to the creation of the World Wide Web and the advent of social networking and ‘Web 2.0’¹. He then goes on to discuss the darker side of Web 2.0, in a chapter titled ‘Dragons, Bears, Cutthroats, and Criminals’, exploring the role of organised crime, state-sponsored hacking, and terrorist groups.

The author also highlights the potential for social networks in developing the way in which we think about war, and in particular, conceptual innovation. Carafano offers insight into the role of social media as an effective means of sharing the operational experience and innovative ideas of military personnel, complementing the lessons of doctrine and formal professional military education. In discussing the importance of conceptual innovation, Carafano reflects on a US Army social media community *CompanyCommand.com*, whose members posed the question “how do you institutionalise innovation?” (p.131). The founders of this social network aimed to facilitate peer-to-peer conversations and attract high quality content, ensuring that the community upheld the values and standards of the US Army, but was not viewed merely as a corporate ‘mouthpiece’.

In later chapters, he goes on to explore the power of social media, including blogging, in mobilising support for a cause, and for a broad range of National Security issues, underpinned

by a 'war of ideas'. The author argues that in order to be able to take the cyber high ground, we need to develop leaders with appropriate interdisciplinary skills and knowledge "not just so they [understand] how computers and social networks work but so they understand how the world works" (p.209). He echoes wider concerns regarding a lack of focus on Science, Technology, Engineering and Maths (STEM) subjects. In calling for a greater emphasis on STEM, he does so not just for economic reasons, but because of the increasing reliance on foreign countries to design, develop and produce technologies which underpin US National Security. However, he argues that in order to enable good decision making, "history, law and the social sciences have just as important [a] place at the desk of the educated cyber leader as STEM" (p.214). The final chapter is devoted to horizon scanning for scientific, technological and societal trends that will impact upon National Security.

Carafano summarises the book arguing that winning in cyberspace "will not happen by happenstance" (p.268). He proposes three laws of 'Wiki Warfare': *Know, Be and Do*. He argues we should *know* the competitors in cyberspace, the 'good, the bad and the ugly'; *be* smart, educated, visionary leaders in cyberspace; and *do*, turn vision into action, provide strategy for cyberspace that is underpinned by resilience.

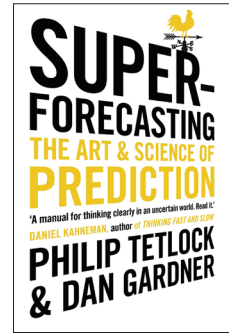
Published in 2012, *Wiki at War*, risks becoming dated in the fast-moving world of online technology. Some of Carafano's discussion covers areas that have become so commonplace they require no explanation. However, this does not detract from what is a highly readable and particularly relevant discussion. Carafano's argument is well researched, based on sound scholarship and deep analysis. This book offers a different perspective on cyberspace with its greater emphasis on the social implications of technology. Fundamentally, this is a book about people and societal interaction. It is highly recommended as an excellent book for military leaders at all levels to enable a greater understanding of human interaction with the cyberspace environment.

Notes

¹ The term Web 2.0 is used to describe the development of the World Wide Web from its early use as a large collection of static web pages (often referred to as Web 1.0), to more interactive user-generated and dynamic content, including social media.

Book Reviews

Superforecasting: The Art and Science of Prediction



By Philip Tetlock and Dan Gardner

Publisher: Random House, 2015 (ISBN: 978-1847947147) 340 pages

Reviewed by Group Captain (Retd) Clive Blount

Biography: Group Captain (Retd) Clive Blount served as a navigator and recently concluded his career at the UK's Development, Concepts and Doctrine Centre. He is also a CAS' Fellow with a Master of Philosophy in International Relations from the University of Cambridge.

Introduction

Philip E. Tetlock is a Professor at the University of Pennsylvania, as well as holding appointments in both political science and psychology departments and the Wharton School of Business, while Dan Gardner is a journalist. Tetlock's previous work looked at the reliability of forecast produced by so-called "experts"; in the 1990s he analyzed the predictions of around 300 respected political commentators and experts, and, to much publicity demonstrated that: "Human beings who spend their lives studying the state of the world ... are poorer forecasters than dart-throwing monkeys."

The premise of this book questions this simplistic summary and asks whether, even if it is the case that "experts" are to all intents and purposes guessing, is it the case that some monkeys are better at darts than others? *Superforecasting* suggests that some people, though not traditionally expert in any particular area, do appear to be able to foretell the outcome of events at a better rate than probability. Tetlock derives his conclusions from the multi-year study known as the Good Judgment Project, which saw thousands of subjects being asked to predict the outcome of a wide range of events. The subjects assigned a percentage likelihood of each prediction coming true, and were given the opportunity to revise their forecasts as new details emerged. At the end of the process, they were scored for the accuracy of their prediction when measured against the actual outcome. It transpired that a small group

amongst these non-experts not only significantly out-predicted their peers but, once parts of the project were incorporated into a wider IARPA competition, teams of professional researchers. Tetlock's analysis of these "superforecasters" concluded that "[i]t's not really who they are. It is what they do." And it is these actions that Tetlock attempts to detail in the remainder of the book.

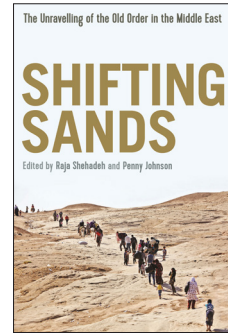
However, if the reader is looking for a simple 'how to guide' on foretelling the future, then he is likely to be disappointed by *Superforecasting*. Written in the chatty style of a business 'self help' guide it spends a great deal of time on anecdotes and supporting tales and, although very entertaining, tends to detract from the meat of the central argument. Forays into business and strategic theory do not help, which is a great shame as what Tetlock and Gardner say are the fundamental skills of superforecasting are easily assimilable and have much applicability to any role involved with strategic planning. The authors surmise that superforecasters break complex problems into smaller, more tractable chunks, apply facts to these small problems wherever possible and only used estimation, intelligent estimation, to fill the gaps. Superforecasters will seek out comparators which might aid formulation of their views, and seek to take a balanced approach to particular pieces of evidence, rather than succumb to the temptation to over-react to them. The most important aspect of their approach is to reflect upon their past performance to avoid repeating previous mistakes or over-emphasizing successes.

In particular, the authors suggest that it is the way the superforecasters answer the question being asked that adds much to their efficacy. Often, the question as stated is loaded with emotion or supposition that introduces unconscious bias into the forecast; answering the opposite question, or subtly rephrasing the question, can negate this effect to give a more accurate forecast. The book also tackles forecasting as a team and discusses the most effective ways of using team members in support of a collective solution rather than allowing individual personalities and biases to skew the answer.

Although somewhat rambling, and containing much that is really not new, as a collective this book is an interesting and thought-provoking read. The skill of superforecasting clearly exists and can be learned and, although I do not suggest that we should all strive to become superforecasters, the skills of parsing, analysing, and predicting the outcome of future events, and effectively doing so as a team, would be of inestimable value to busy commanders and staff officers in an increasingly complex and chaotic world. This book is well worth the patience and time to read and absorb.

Book Reviews

Shifting Sands: The Unravelling of the Old Order



By Raja Shehadeh and Penny Johnson

Publisher: Profile Books Ltd (ISBN: 978-1781255223) 208 pages

Reviewed by Captain John Hart

Biography: Captain John Hart is a full-time reservist in the Royal Engineers based at Leuchars Station. He retired as an RAF Intelligence Officer with 18 years' service in 2013 and previously studied Middle Eastern and Central Asian politics as a CAS' Fellow at the University of St Andrews.

Introduction

Untold riches were anticipated behind the sealed door, but it was only to be opened on the death of Abu Jafaar al-Mansur, the eighth century Abbasid caliph and founder of Baghdad. Mahdi, his son and heir, had expected wealth but eventually found a room of corpses: men, women and children; in each individual's ear was a leather tag with their name and ancestry. All were Alids, today's Shia.

Justin Maronzzi's macabre tale provides a singularly penetrating insight that gives a new dimension to events in modern Iraq and Syria. It is one of many historical anecdotes that illuminate Raja Shehadeh and Penny Johnson's edited volume, *Shifting Sands: The Unravelling of the Old Order in the Middle East*. The book originated from a series of panels held at the 2014 Edinburgh International Book Festival, when the headlines were dominated by conflict in Gaza and Islamic State's swift drive into Iraq. Historical debate on the creation of the Middle East was also re-energised, when Islamic State ploughed through a sand berm, symbolising destruction both of the current Syria-Iraq border, and the 1916 Anglo-French Sykes-Picot Agreement. Shehadeh and Johnson, both human rights activists, are primarily associated with Palestinian issues but their work covers most major countries, although Israel is surprisingly absent.

The book, consisting of 14 authors, is difficult to categorise, covering a broad range of political, historical and social topics. It is divided into 4 thematic sections centring on historic origins, contemporary political events, the Syrian crisis and the role of fiction and imagination. The remit of the book is both ambitious and, necessarily, selective. The Editors unapologetically eschew dispassionate analysis in favour of insight and personal experience due to the “urgency of understanding” (p.3) the region requires.

The opening chapter by Avi Shlaim presents a conventional charge sheet on the Anglo-French imposition of a Westphalian state system in the Middle East. The imperial powers partitioned the hitherto undivided Arab lands and, in doing so, institutionalised weak states inherently lacking in national legitimacy. The post-war settlement is not distant history but, he contends, at the heart of current conflicts and the root cause of the region's turmoil and instability. A more nuanced view is presented by James Barr (author of the recent history of the region, *A Line in the Sand*). The Sykes-Picot Agreement was less a conspiracy to divide and conquer the Middle East than a product of long-standing Anglo-French rivalry. Ultimately, despite declarations of good intent on managing their new mandates, great power politics prevailed in the region. Yet although the region's Westphalian state system is under sustained attack, its borders remain resilient. The direction of political evolution remains uncertain and prospects of inter-communal reconciliation appear distant. Tamim al-Barghouti's call for Arab nations to unite in a renewed anti-Israeli consensus is disheartening. The need for a Palestinian settlement remains urgent, but Israel may represent less a cause of instability, than a symptom of it.

The book is enhanced by the inclusion of personal narratives chronicling the wave of unrest sweeping the region. Khaled Fahmy provides a lucid and honest analysis of the Arab Spring in Egypt and he perceptively identifies emerging trends in popular protest. One significant feature is that although the ability to communicate via the web and social media has proliferated, centralised leadership and direction is largely absent. Despite Egypt's recent retreat from its experiment in democracy, Fahmy retains hope. The 'lid is off the box' and politics is now everywhere and in every conversation: Egypt's political evolution has not finished. Turkey and Iran are discussed with Ramita Navai articulating her grievance against the now counter-revolutionary Iranian state fearful of reform, the so-called “domestic leviathan” (p.80).

The section on Middle Eastern literature presents a thoughtful range of ideas and exposes the reader to a subject little known in the West. The writers are reflective of linkages between past and present societies, not least the insight into innovative feminist ideas found in early twentieth century Arab literature; issues concerning the role and status of women in contemporary society is touched upon by several writers. Looking through an old yearbook, Mai al-Nakib reminisces about 1960s Kuwait and discovers its hidden, cosmopolitan past. He muses over an old university photo, noting the fashionable Sixties hairstyles sported by all the female students. In stark contrast to al-Nakib's current students, none were wearing a hijab.

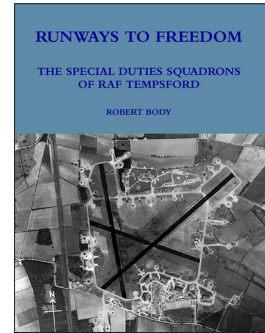
There are many engaging accounts from the frontline in Syria. Of particular interest was Malu Halasa's chapter detailing creative forms of street protest, including messaging the anti-Assad narrative through Japanese-style manga cartoons. An early, non-violent victory against Assad was achieved by breaking the psychological barrier of fear surrounding the regime; it was targeted by that most subversive weapon of the masses: humour. The technological medium of reporting has also evolved and I was surprised to discover that Syria recently hosted its own 'Mobile Phone Films Festival': the citizen journalist is now taking centre stage.

If there was an aspect that required more exploration, it would have been for the Editors to have given greater critical analysis to the narrative of grievance and historical inevitability linking contemporary problems to the creation of Middle Eastern states. That the original Imperial powers and subsequent Western policy has had an, at times, detrimental effect on the region is uncontested. Recent criticism by Sara Pursely, however, charges that to absolve local actors and states of all responsibility is to deny their agency in their own affairs. The irony is that most of the book's contributors clearly see local agency within their own countries, but find a balance of culpability originating both from within and without. One writer states his belief that good governance in the region is an oxymoron. Yet, as the book articulates, good governance is desperately needed, not least to facilitate the long overdue renegotiation on the relationship between state, civil society, religion and the individual.

The book is written for a wide audience and I firmly recommend it for the broad view it takes. It has an accessible style of writing and each chapter offers new and, at times, challenging insights. The book's strength is to expose the reader to an expansive range of history, politics, reportage and social commentary that, taken as a whole, provides a more fleshed out narrative than provided by mere media headlines. The book reveals both the continuities and contradictions of the Middle East as well as offering historical anecdotes that provoke fresh thought on contemporary challenges. Most importantly, it demonstrates that, despite many difficulties, people in the region retain hope and are able to imagine a better future.

Book Reviews

Runways to Freedom: The Special Duties Squadrons of RAF Tempsford



By Robert Body

Publisher: Lula.com (ISBN: 978-1326098407) 300 pages

Reviewed by Lieutenant Colonel (Retd) Dr Richard Newton (USAF)

Biography: Lieutenant Colonel (Retd) Richard Newton is a senior lecturer at Joint Special Operations University specialising in air power theory, planning, and integration. He is a graduate of the USAF Academy, the US Army School of Advanced Military Studies, and King's College London. Dr Newton served 22 years in the USAF as a combat rescue and special operations helicopter pilot, planner, and educator.

Introduction

Bob Body has produced a valuable history of air power that ought to resonate with every airman and special operator, especially now when the need for special operations forces (SOF) to address the challenges of modern conflict has become so acute. What *Runways to Freedom* capably illustrates is how airmen, like their land and maritime counterparts, stepped up and developed unconventional and innovative tactics and equipment needed to support Resistance organisations from Norway to the Mediterranean and from the Atlantic to Poland.

In the spring of 1940 the Prime Minister appointed Hugh Dalton, as the Minister of Economic Warfare, with the mission of disrupting German activities, supporting the Resistance, collecting intelligence, and spreading subversion across occupied Europe. Thus, the Special Operations Executive was created. In August 1940 in order to support SOE operations, the RAF formed two Lysanders into 419 Flight at RAF North Weald. Very quickly, the task grew too large for two Lysanders and by February 1942 two squadrons, 138 and 161 Sqns, were based at RAF Tempsford and employed for special duties.

Runways to Freedom is a detailed history of these two unique squadrons and the men who flew and supported special air operations during the Second World War. The book makes extensive use of primary source materials from The National Archives, with two-thirds of the pages given to month-by-month synopses of the squadron records. The author overcomes the inherent dryness of such a foundation by enlivening the pages with personal histories, anecdotes, and stories provided by the veterans of these squadrons.

Body nicely illustrates a challenge that modern special operations airmen continue to face – they tend not to fit with their conventional Air Forces by equipment, primary missions, and temperament. A point highlighted by Sir Arthur Harris' proposal that special operations tasks could be performed by ordinary bomber crews as part of their normal duties. During the summer of 1942, 138 and 161 Squadrons participated in a few conventional bombing raids until the Prime Minister and the heads of Special Intelligence Service and Special Operations Executive intervened to ensure that the squadrons were not subsumed into the conventional air force.

One of the strengths of this book is that it gives acclamation to the supporting elements that made the special duties mission succeed. The men of the SD squadrons had to develop procedures for low-level airdrops out of aircraft not originally designed for such operations. For the bombers, a 40" hole was cut into the bottom of the aircraft and a hinged door emplaced. People and cargo would be sequenced out of the hole based on mission requirements. To allow the door to work, the two mid-level gun turrets had to be removed – saving weight, but increasing the aircraft's vulnerability. As aircraft were lost, the engineers and mechanics were constantly modifying replacements to SD standards.

What comes out of Body's narrative is the tremendous price these airmen paid in order to 'do their jobs'. Because operational flying was limited to two weeks either side of the full moon – navigation was primarily visual with the navigators or pilots using moonlight reflected off rivers, lakes, and roads to find their drop zones or landing zones – the number of aircraft and aircrews lost was very high. And because not everyone was suited for nor desired to perform the long, lonely, and low-level flying across the length and breadth of Europe, the pool for replacement aircrews was small.

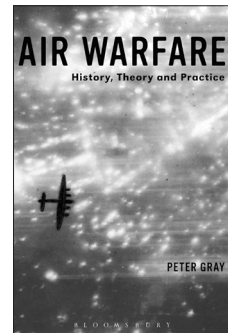
Runways to Freedom is a worthy addition to any collection of air force histories and especially for those in the general audience who are interested in the more unusual aspects of air power. The author achieves a nice balance between primary source materials and personal anecdotes, and he does not clutter the pages with the quantity and specificity of notations expected from a primarily academic work. The references to primary sources is sufficient to stimulate further research by academics, while maintaining the readability and clarity that keeps the book appropriate for non-academics.

Upon reading *Runways to Freedom*, modern airmen will recognise that many of the administrative and technical challenges faced by SD airmen during the Second World War

still exist today – lack of appreciation for the unique contributions by special air operations to national security, struggles for material and manpower resourcing within and amongst the Services, and balancing operational security with the need to coordinate air operations in crowded airspaces. The book serves as an excellent case study about what it means to be ‘SOF’. The men of RAF Tempsford showed that it was the ‘special operations mind-set’, looking at the challenges at hand and then applying unconventional and inventive means to overcome those challenges that made the RAF’s Special Duties squadrons different and ultimately successful.

Book Reviews

Air Warfare: History, Theory and Practice



By Air Commodore (Retd) Dr Peter Gray

Publisher: Bloomsbury Publishing plc, 2015 (ISBN: 978-1780936628) 208 pages

Reviewed by Group Captain (Retd) Ian Shields

Biography: Ian Shields is a retired Group Captain. A navigator, he operated the Vulcan and primarily the Hercules, commanding 47 Squadron 2001-2003. He holds post-graduate degrees from KCL and Cambridge University, where he is currently researching for a doctorate.

Introduction

If there is a contemporary British academic suitably qualified to write a new textbook on air warfare, it would have to be Air Commodore (Retd) Dr Peter Gray. A former Director of Defence Studies for the RAF, the Royal Aeronautical Society's Senior Research Fellow in Air Power Studies and the convenor and primary lecturer in a Master's programme in Air Power Studies at the University of Birmingham, the author is eminently well-qualified to write such a book. And it is the *tour de force* that one would have hoped for. It is, in its intent and its delivery, unashamedly an academic textbook, and is not a lightweight read, but given the complexity and the seriousness of the subject material, it is all the richer for this.

One of the book's many strengths is that it tackles, head-on, many, if not all, the core debates surrounding air warfare today. The book starts by setting the scene with a thorough examination of the study of air warfare and its place against the wider sweep of military history, before examining the historiography of air warfare, considering the value of different sources and evaluating how our thinking about the subject has evolved. Although a slightly dry subject, these early chapters are vital in setting the scene for what is to follow, and in particular the succeeding chapter that traces the development of air power thinking. This development, with its themes of over-optimism and misplaced faith (largely driven by ignorance and too

little understanding of the technical limitations of the time) continues to shape the debate today, as is clear in the next two chapters that delve into the practice of air warfare and its leadership. Here, the value of the earlier chapters becomes ever clearer, for without first examining its academic origins, the mistakes and the odd triumph of air warfare in its delivery would have not been so easily, and so well, explained. But for this reviewer, it is the chapters on legality, legitimacy and ethics, and on strategy, operations and tactics, that make this book such a compelling read. Of all the issues facing proponents of air warfare today, the ethical dimension and the correct level at which air power can and should be employed are the most pressing. In commendable detail but with telling clarity, Peter Gray dissects these most complex of issues to expose the real questions. Equally impressively, he avoids the Siren's call and does not offer answers or opinions, sticking rigidly to his aim of delivering a true textbook.

While this book offers little that is new, drawing as it does on well-used and well-documented sources, the clarity of the thought throughout this book marks it out as a future classic. While many American authors have attempted similar feats, this rare offering from a British author, tackling the issues from the perspective of a British academic and through the twin lenses of the RAF and wider British military experiences, offers a new and valuable, not to say well-targeted, analysis. It is not, in all honesty, a light read, but again it is a textbook, designed for students studying British military power in the third dimension. Nor is it a long book: the substantive chapters run to just some 120 pages, albeit of dense text. But this will no doubt become a staple of air power studies, and deserves the time and effort to be read thoroughly; contemplation of its messages will be well rewarded. This book should be a well-thumbed addition to the bookshelves of all air power thinkers and practitioners.

Book Reviews

The New Tsar: The Rise and Reign of Vladimir Putin



By Steve Lee Myers

Publisher: Simon & Schuster, 2015 (ISBN: 978-1471130625) 592 pages

Reviewed by Dr Vladimir Rauta

Biography: Dr Vladimir Rauta is a University of Portsmouth Teaching Fellow in Strategic Studies based at RAF College Cranwell. His expertise is in indirect third-party military intervention, or, simply put, proxy wars. His research has focused on unpacking the concept of proxy wars theoretically against a wide empirical research (from Africa to the recent Ukrainian crisis).

Introduction

US President, Barack Obama, once described Russian President Vladimir Putin as the “bored schoolboy in the back of the classroom”. Yet, as a schoolboy, Putin was “highly disruptive in and out of class, more inclined to hang out with boys, [...], considered a bad influence” (p.15). One is tempted to wonder if this is still the case just by looking at Putin’s political and personal friendships with Syrian President Bashar al-Assad and Iranian Supreme Leader Ali Khamenei and President Hassan Rouhani. Steven Lee Myers’ recently published book, *The New Tsar – The Rise and Reign of Vladimir Putin*, achieves this exact, rare feat: it engages the reader in a comparison of present and past history. What makes this an intellectually refreshing exercise is that the reader ends up comparing contemporary events as ‘history’ with the personal history of the people shaping them. How much does indirect Russian support to Transnistria owe to Putin’s trips to Moldova attending judo competitions? Is Abkhazia still the place of Putin’s summer camps? And, more importantly, does Crimea hold both historical relevance to the Russian state and personal significance to Putin as his honeymoon retreat?

Of course, the conjectures are far-fetched when translated into policy-making concerns and considerations. Nevertheless this is the purpose of a biography: to build context – personal

context actually – around moments in and of history. *The New Tsar – The Rise and Reign of Vladimir Putin* is the most compelling, extensive and complex biography of Vladimir Putin to date, in the English language. It is a remarkable account of Putin's life and how it has influenced the Russian leader's quest to bring the Russian state to its former glory. The book walks the reader step by step through Putin's childhood, adolescence, and university experience. It observes at length his KGB career and the transitioning into politics. With minute patience, Myers describes and analyses Putin's formative experience in the 1990s and then his transformation from an unknown politician to the tsar who brought Russians pride in their country.

The reader gets to see a star gazing Putin: "the stars seemed to just hang there, [...], sailors might have been used to that, but for me it was a wondrous discovery" (p.21); a fitness-obsessed Putin; one listening to the Beatles, reading banned literature circulated in carbon copies and emotionally reticent, "even stunted" (p.29) in the presence of women. What is extraordinary is that, almost like a novel, the book captivates through its ability to bring, parallel to Putin's personal narrative, a view of the Russian state in and out of communism. It is a splendid account of Soviet life and society with the KGB in centre stage: "it was a state within a state ever in search of enemies within and without" (p.24). The cruel realities of day-to-day life were nothing short of those portrayed by American propaganda: shared housing, food rations, state surveillance. But, most importantly, the reader gets to see a confused, disappointed and furious Putin. Directed at the inability of the Russian state to further face the West, Putin is shown vowing never to allow Moscow to be silent. The collapse of the Soviet Union caught Putin alone in East Germany in rioting Dresden with no support from the centre. Democracy, thus, challenged Putin's beliefs in the strength of institutionalised communism in a brash, unexpected personal encounter.

Myers argues that twenty-first century Vladimir Putin is the construct of an order-disorder binary. Putin encapsulates the former and repels the latter. His core objective, both personal and political – though in Russian politics the two are found overlapping – is strength. For Putin, order and strength are mutually constitutive, often used interchangeably both as means and ends. This explains Putin's pursuit of domestic and international policies. Looking inwardly, Putin carved a personalised type of democracy with no political parties and a farcical representation of popular will. Looking outwardly, Putin has built an assertive state legitimised and reinforced by the consolidated domestic control. At the international level, Putin epitomises a dying breed of politician: a Cold War warrior with nineteenth century imperial ambition who employs a hard geopolitical language at odds with the post-modern political discourse. Military intervention, proxy wars and defiance of international law are marks of Putin's engagement with the international community, as well as a sign of a troubled relationship. Myers' account stands out for its ability to project the future of Putin's plan for Russia as a victim of the order-disorder binary it stems from, on grounds of the uncertainty it is shrouded in. As such, Myers' book is a welcomed and valuable addition to an emerging cluster of research, *Putinology*.

<http://www.airpowerstudies.co.uk>

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