False Start: the Enduring Air Power Lessons of the Royal Air Force's Campaign in Norway, April-June 1940

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2010 marks the seventieth anniversary of the expeditionary campaign that was fought in Norway in the spring and early summer of 1940. Although the operation was eclipsed at the time by the *Blitzkrieg* in France and then subsequently by the Battle of Britain, it is worthy of study as a significant milestone in the development of air power; the *Luftwaffe* demonstrated, for the first time in modern warfare, how all four air power capabilities – control of the air, intelligence and situational awareness, air lift and attack – could be brought together to influence a joint campaign decisively. In contrast, the RAF's activities were much less successful, primarily because it was neither organised nor equipped to undertake expeditionary warfare, but it still contributed more to the campaign than is generally acknowledged. In particular, air operations around Narvik played a part in the Allies' relative success in the far north, and act as a useful point of comparison with the disastrous experience in south-central Norway. This essay argues that considered analysis of Norway 1940 highlights many lessons that are still of real contemporary relevance; in particular, the critical importance of control of the air in enabling all other activities; the psychological impact of air power; and air power's potential as a force multiplier, providing mobility and firepower to small bodies of troops in extremely difficult terrain. But the limits of the air weapon were also evident, especially its dependence on force protection and secure basing in a campaign that was dominated by range and distance, time and space, and the paucity of useable airfields.

The failure of the RAF as an expeditionary air force in Norway in 1940 is poignantly captured by this image of a wrecked Gladiator, still visible seven years later at Lake Lesjaskog.[1]

Introduction

In 2010, historic commemoration within the Royal Air Force has focused almost exclusively on the seventieth anniversary of the Battle of Britain. This is understandable, because as John Terraine notes, this iconic event remains 'the one indisputable victory in a recognizable air battle of decisive importance.'[2] But celebration of the Battle of Britain has eclipsed another important anniversary: the much less successful but nonetheless noteworthy part that the RAF played in the disastrous Allied expedition to Norway in the spring of 1940. This campaign is significant, both as the first real test of British arms in modern warfare since 1918, and also as the RAF's first attempt to influence the outcome of a truly joint, tri-service campaign. Yet in the historiography, analysis of the RAF's contribution tends to be superficial, and is coloured by a pervasive impression of hopeless gallantry in a lost cause: of outdated biplanes flown from frozen lakes in the face of overwhelming German air superiority; or the tragedy of the loss of two fighter squadrons when the aircraft carrier evacuating them was sunk, a particular irony after the triumph of the unrehearsed deck landings that seemed to have guaranteed their unlikely escape.[3] In reality, the RAF's experience in Norway was far more complex and nuanced, and the campaign highlights many lessons that are still of real contemporary relevance; indeed, few operations demonstrate the enduring verities of air power with quite such stark clarity. Furthermore, the *Luftwaffe's* activities, if not always the RAF's, marked a step change in the development of air power, presaging the way in which the collective employment of the whole panoply of air power capabilities can be employed to generate decisive effects that can fundamentally influence the outcome of an entire campaign.[4]

Strategy and Plans

Following the outbreak of war, Britain and France had sensibly adopted a posture of strategic defence while they continued to mobilized and rearm. But as the 'Phoney War' dragged on through the winter of 1939, pressure began to mount for some sort of initiative to be taken, although there was absolutely no

appetite for any action on the Continental mainland that might precipitate a reprise of the horror of the trench warfare of 1914-18; instead, a limited, expeditionary adventure to a remote theatre seemed to be a far safer and more palatable alternative, and the 'Winter War', which had broken out between Finland and Germany's then ally, the Soviet Union, focused attention on Scandinavia in general and Norway in particular. At one level, this was simply a case of access to resources. Over two-thirds of the iron used by Germany's armaments industry originated in Scandinavia and although it was mined in Sweden, it had to be shipped through the ice-free Norwegian port of Narvik. This meant that German cargo vessels could then take advantage of Norway's strict neutrality by making passage down the coast through the Norwegian Leads, effectively free of the fear of British attack. But more fundamentally, Norway's geographic position meant that it dominated the North Sea, and this imbued it with huge strategic significance: either as a potential base for British attempts to blockade Germany, or for German attempts to sever Britain's supply routes. Consequently, both Germany and the Allies developed plans to secure Norway, either to promote their own strategic interests directly, or to counter any potential move by their opponents.

Winston Churchill, the First Lord of the Admiralty, was the most vociferous advocate of intervention in Scandinavia. Despite Finland's eventual defeat in the Winter War, he continued to champion the idea of an expedition to Norway throughout the spring of 1940, eventually gaining approval for the less than inspiringly named *Operation Wilfred*. This was a scheme to mine the Leads and thus force the iron ore ships out into international waters, where they could be engaged and destroyed by the Royal Navy. As this would almost certainly provoke a German reaction, a contingency plan ('*R.4*') was developed to accompany *Wilfred*. This aimed to shore up Norwegian resistance to any attempted German occupation by deploying a British Expeditionary Force to hold a number of key ports. But *R.4* was purely reactive, the allocation of forces was pitifully small - and the *Wehrmacht* acted first.

The German operation was prompted initially by the *Altmark* incident. On 16 February, the destroyer *HMS Cossack* had intercepted the *Graf Spee's* supply ship deep in Norwegian territorial waters, liberating the 300 British prisoners carried aboard to the famous cry "the Navy's here!" This convinced Hitler that Britain was ready to flout international law whenever it suited her to do so, and reinforced his instinct that he needed to move quickly to forestall any larger-scale Allied encroachment on Norwegian neutrality. His response was *Operation Weserübung* (the 'River Exercise'), which aimed to secure Norway once and for all. This was the first genuinely joint air, land and maritime operation to be attempted in modern warfare, with each component depending totally on the others to achieve operational success. Quite correctly, the German planners assessed that the outcome would depend on the huge distances involved, the difficulty of the terrain, and the paucity of suitable airfields and ports. They concluded that a

closely coordinated joint assault was required, not just on Norway, but also on Denmark, to secure mounting bases and the lines of communication into the operational theatre. The power of the *Luftwaffe* would be used as an antidote to British naval supremacy, and shock and surprise (subsequently described by the British as 'gangster tactics'[5]) would be employed ruthlessly to mitigate the very real risks involved. Grossadmiral Raeder, commander-in-chief of the *Kriegsmarine*, summarised the intention in his Operational Instruction: 'The prerequisites for success are surprise and rapid action executed with boldness, tenacity and skill.'[6] The aim was to use overwhelming force to complete the mission as quickly as possible, so that the forces employed could be made available as soon as possible for *Fall Gelb* ('Case Yellow'), the *Blitzkrieg* on France; the key to success would be the seizure of the few available ports and airfields at the outset, as this would then make it extremely difficult for the Allies to mass sufficient combat power to mount an adequate response. The first German naval units sailed on 7 April, and *Weserübung* itself was launched on 9 April 1940, forestalling *Wilfred* just as the British operation was about to begin.

Policy and Force Structure: the RAF in 1940

The RAF's organisation in 1940 demonstrates the impact of policy on strategy, doctrine and force structure. British inter-war policy was based on the concept of 'Limited Liability'. Driven by the imperative to avoid the mass casualties of the Great War, Limited Liability decreed that there would be no large-scale commitment of ground forces to any future continental war; instead, the British contribution would be confined to the RAF and Royal Navy, operating from secure bases in Great Britain itself. Although this policy was abandoned in March 1939 - when the German invasion of the rump of Czechoslovakia finally demonstrated that a British Expeditionary Force would have to be established to support the French on the Continent - by this stage it was simply too late to alter the priorities that had been set in the rearmament programme, or to restructure the RAF for a different sort of war to the one that had been anticipated during pre-war expansion.

One consequence of Limited Liability was the RAF's decision (implemented in 1936) to structure itself into three, mono-functional, commands: Fighter, Bomber and Coastal. This created a framework that was ideal for managing single-role campaigns fought from well-found, permanent bases in the metropolitan homeland, where little inter-command cooperation was required: examples were to include the Battle of Britain, the RAF's contribution to the Battle of the Atlantic and the Strategic Bombing Offensive against Germany. But as events in Norway and then France were to demonstrate, the single-role command model did not provide a structure that could be readily used to deploy and support an expeditionary air component in the field, or integrate the balanced mix of air power capabilities required by a joint force – a requirement that had never been envisaged in the era of Limited Liability. It is telling that

when British forces again engaged the main force of the enemy by land, multi-function air commands (such as the Western Desert Air Force in North Africa and 2 ATAF (Allied Tactical Air Force) for the north-west Europe campaign) had to be created; but these had no equivalent in 1940, and this meant that the organisation of the RAF's expeditionary capability in Norway would inevitably be extemporised and *ad hoc*.

Although this Ju 52 transport met a premature end at Trondheim, air lift was critical for the Wehrmacht*, not just in supporting land operations, but also in seizing and then supplying the captured air bases that underwrote the* Luftwaffe's *ability to control the air.* [7]

The lack of an air transport fleet was another example of the way that Limited Liability had skewed the RAF's force structure. With limited time and resources available for rearmament, priority in the pre-war expansion plans was naturally given to the interceptor fighters and long-range bomber aircraft required for a strategic air force intended to fight from Great Britain. There seemed to be little point in investing in air lift, when policy dictated that there would be no expeditionary force requiring this capability. Consequently, other than a few obsolete Bristol Bombays, there was no British counterpart to the cheap and reliable German Ju 52/3m tri-motor transports that were to have a huge influence on the campaign.

In contrast to the RAF's structure, the *Luftwaffe* was organised into balanced, multi-role air fleets or *Luftflotten*, which were ideal vehicles for the delivery of tactical air power, if less effective for conducting strategic air campaigns. *Luftflotte 5* was created specifically for *Weserübung*: it was allocated over 500 combat aircraft for the operation, including 50 reconnaissance aircraft, 150 single and twin-engine fighters, and 330 medium and dive-bombers. 571 Ju 52 transports were also included as organic elements of its battle order, and these were to fly 3,018 sorties, carrying vital supplies and 29,280 troops over Norway's difficult terrain and endowing the *Wehrmacht* with a tempo and flexibility that the Allies never came close to matching.

The German Assault

At dawn on 9 April, Ju 52s transported paratroops and air landing battalions to assault the three most significant Norwegian airfields: Stavanger-Sola, Oslo-Fornebu and Oslo-Kjeller. The slow and highly vulnerable transports operated with relative impunity thanks to the escorting long-range Messerschmitt Bf 110 fighters, which quickly overwhelmed the tiny

Norwegian air defence force of just one squadron of nine Gloster Gladiator biplanes.[8] At Fornebu, the Gladiators managed to shoot down a Ju 52 and two Bf 110s before they were destroyed, an early indication of the vulnerability of these unwieldy twin-engine fighters, even to obsolescent biplanes. However, the airborne troops were still able to secure all three airfields quickly. German air superiority was then reinforced by further judicious employment of the air transport fleet, which was used to fly fuel, weapons and servicing crews into the captured bases immediately, permitting short-range tactical aircraft to be refuelled and rearmed as close to the fighting as possible. Highly capable Messerschmitt Bf 109 single-engine fighters and Ju 87 *Stuka* dive-bombers were flying out of the Norwegian airfields within six hours of the start of the operation, reducing mission times and increasing sortie generation rates in a model that was repeated to similar effect a month later in the *Blitzkrieg* in France. The net result was that control of the air had been achieved throughout southern Norway at the very outset of the campaign; the whole range of air power effects could now be exploited to the full.

Simultaneously, a series of amphibious landings (escorted by virtually all of Germany's small surface fleet) successfully occupied Norway's six most important ports, although not without loss: Norwegian coastal defences sank the heavy cruiser *Blücher* at Oslo, while the Royal Navy used its freedom of manoeuvre in the far north - where it could operate beyond the range of *Luftflotte 5's* bombers - to sink much of the *Kriegmarine's* destroyer force in two separate battles around the key strategic port of Narvik, although not before the German occupying force had already been landed. Meanwhile, the bloodless occupation of the Danish peninsular secured the strategic air and sea supply routes into theatre. This meant that despite the Royal Navy's overwhelming numerical superiority, by noon on the first day of the operation the *Wehrmacht* had occupied every air or sea port of any consequence in Norway itself, and had also established a secure mounting base only 200 miles away. These were critical successes in a campaign that was to be dominated by range and distance, and the Germans were now free to start the process of consolidation by beginning to link up the bridgeheads.

The Allies' response to the invasion was to create an *ad hoc* expeditionary force based on the British units already allocated to *Plan R.4*, but including significant French and Polish elements: the battalion of *Chasseurs Alpins* were later acknowledged as the most effective Allied troops in Norway. But from the outset, as Terraine laments, Allied operations displayed 'an amateurishness and feebleness which to this day can make the reader alternately blush and shiver.'[9] The putative objective was Trondheim in south-central Norway, because this was a natural choke-point and communications hub at the narrowest part of the country, where any further German advance to the north could be easily blocked. But in reality, the location was determined by German air power, as a landing further south would have exposed

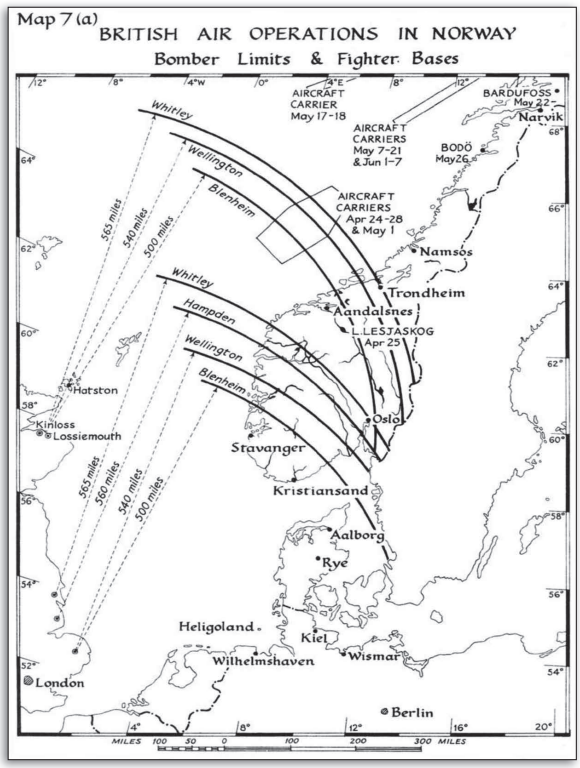
the Allied expedition to the full force of the *Luftwaffe* bombers now firmly established around Oslo.

A twin-pronged advance on Trondheim was planned from the small ports of Åandalsnes and Namsos, but whereas the Germans fielded seven divisions, the Allied Expeditionary Force was of only divisional strength, split into three weak, roughly brigade-sized groups. This was typical of a piecemeal approach where no main effort was ever apparent: it was planned that two of the brigade-groups would secure the ports, while the third would be deployed 'somewhere else to forestall the Germans.' Meanwhile, a separate and subsidiary operation codenamed *Rupert* aimed to retake Narvik, where the small German landing force had been cut off following the naval actions. Although earlier plans for Norway had included a significant air component, amazingly enough, in mountainous, snow-covered country where land movement was extremely difficult, it was decided that 'with regard to air forces…none should accompany the expedition in the first instance.'[10] This curious decision may have been due to a lack of appreciation of the significance of air power in modern warfare, notwithstanding the example of Poland, as although the Chiefs of Staff acknowledged that 'the German air threat is great,' they still downplayed its importance. The Navy was particularly confident about the efficacy of the fleet's anti-aircraft fire,[11] and it was therefore decided that the risk of deploying an expeditionary force to Trondheim without air cover was acceptable.[12] Unsurprisingly, this rose-tinted view was not shared by the Chief of the Air Staff, who intervened to force his peers to acknowledge the difficulty of maintaining an expeditionary force in Norway if the Germans could establish airfields in the country first. Although the full significance of air power may well have escaped at least some of the decision-makers, it is likely that the failure to provide adequate air support was a result of a recognition of the practical difficulties involved in supporting a capability in theatre, given the distances involved and lack of suitable airfields, and an acknowledgement that scarce air assets would have to be conserved for greater tests ahead. The Joint Chiefs noted that 'air support for such an expedition could only be provided at the expense of our Metropolitan Air Force. The allocation of fighter squadrons would be a particularly serious commitment and we could not afford more than a token protection of the land forces.'[13] It is clear, however, that the planners recognised that it was absolutely critical to forestall the Germans, as it would be impossible to dislodge them once they dominated the lines of communication, the ports and the airfields. In particular, it was understood that 'German aircraft operating from Norwegian airfields would be the most serious threat.'[14] The wisdom of continuing with the operation must, therefore, be open to question, once the Germans had established exactly those conditions that the progenitors of the expedition had predicted would lead to its ultimate failure.

The problems of distance and basing became abundantly clear as the British attempted to cut the

Wehrmacht's lines of communication in advance of the Allied landings. Whereas the Germans were now operating over short, secure and easily defensible supply routes, the RAF and Royal Navy were faced with a contested transit of between 600 and 1000 miles to reach the scene of action. Although Coastal Command Sunderland flying boats located the heavy units of the *Kriegsmarine* as they returned from the landings, subsequent air attacks achieved little in return for heavy losses. Fleet Air Arm Skua dive-bombers sank the light cruiser *Königsberg* on 10 April (the first occasion that a major warship was sunk by air action in combat), but RAF's Bomber Command suffered terribly. The German warships were difficult and highly mobile targets. This meant they had to be attacked in daylight, and the distance from British airfields meant there could be no fighter escort. Nos. 44 and 50 Squadrons were subject to a particularly grisly ordeal, graphically recounted by Guy Gibson in *Enemy Coast Ahead*.[15] Their turret-less Hampdens had no beam defences, so *Luftwaffe* Bf 110s were able to take position at co-speed just outside the bombers' formation, using their wireless operators' sideways firing machine-guns to pick off the bomber pilots at point-blank range as they sat helplessly in their cockpits. Half of the Hampdens were 'hacked down from the wingmen inwards' in what was little more than a process of cold-blooded execution. In an act of desperate defiance, one pilot slid back his canopy and shot at the German fighters with his service revolver before he received the inevitable 'machine-gun serenade in the face.'[16] The chastened survivors eventually managed to escape into a cloud-bank.

The Second Phase: Allied Landings in Central Norway



Geographic realities (1): with no bases available in Norway, Bomber Command had little opportunity to influence operations further north than Trondheim.[17]

Following the failure to destroy the German fleet on its return voyage, British air operations switched to attacks on the captured airfields in a forlorn attempt to write-down the *Luftwaffe's* control of the air in preparation for the Allied landings. The most important German bases were at Oslo-Fornebu, the key to any German advance northwards, and Vaernes, near Trondheim itself.

However, these airfields were between 580 and 760 miles from the nearest bomber bases in Great Britain, and only the slow and vulnerable Whitleys of No.3 Group could operate over these sorts of ranges. Whitleys could not fly in daylight with any hope of survival, but were unlikely to be able to find the landlocked enemy airfields - located deep in the mountains - at night. Consequently, raids were concentrated against Stavanger-Sola, which was a much less significant airfield in operational terms, but could be reached by all of the British bomber types and was easier to identify, as it was situated on the coast. Stavanger was first attacked on 11 April and bombed regularly thereafter, with little overall effect on the campaign.

German control of the air therefore remained largely unchallenged, and the *Luftwaffe* was free to take prime responsibility for thwarting the British advance on Trondheim following the Allied landings at Namsos and Åandalsnes. The reconnaissance aircraft and bombers of *Luftflotte 5* were able to identify and attack targets at their leisure, and there were ample resources available to provide close air support for the German army units advancing north against the Allied lodgement. Within five days of the initial landings on 14 April, Namsos had been virtually destroyed by aerial attack, forcing Major General Carton de Wiart V.C, the British commander (and legendarily brave Boer War veteran), to signal the War Office 'that there was no alternative to evacuation unless German air operations could be restricted.'[18] The second prong of the British force came under similarly intense pressure as it tried to push on from Åandalsnes. The brigade consisted of a high proportion of raw troops and was 'ludicrously short' of anti-aircraft guns. In unusually fine weather, the British soldiers were peculiarly vulnerable to air attack as they struggled up the narrow, snow-bound valleys with no air defences, sparse cover and little room to manoeuvre.

By now it was abundantly clear that the position was completely untenable unless fighter protection could be provided, but no RAF units had been nominated to deploy, all known airfields were held by the Germans, and it would be very difficult to find a useable landing ground in mountainous terrain covered almost entirely in snow. But patently, something had to be done, and the aircraft carriers *Glorious* and *Ark Royal* were sent north to mount a number of fighter patrols over both Namsos and Åandalsnes, while Fleet Air Arm Skuas and Swordfish attacked targets around Trondheim, including Vaernes aerodrome, on 25 April. However, it was clear that shore-based fighters were also required if German control of the air was to be seriously contested, and *Glorious* had hastily embarked the eighteen Gladiators of the RAF's No. 263 Squadron (from RAF Filton) as she sailed. The squadron had only been formed in December 1939 and still lacked its full complement of ground crew, but was selected for the task on the basis that its obsolescent biplanes would be easier to operate from rough landing grounds than more modern fighters. But the squadron was completely unprepared for expeditionary operations; its personnel had no inkling that they were due to deploy until the day

before embarkation, when they were told to find some warm clothing and the pilots were issued with pistols.[19]

A potentially suitable landing site was identified at a frozen lake, Lake Lesjaskog, but because Fighter Command was configured to operate from well-found, static bases and not for mobile operations, the support equipment was inadequate, there was no establishment of M/T (motor transport) and no means of preparing a runway surface on the lake – in the end, a passing Lapp herdsman was co-opted into using his reindeer to trample the snow flat in exchange for a bottle of naval rum.[20] The squadron's servicing party arrived on the cruiser *HMS Arethusa* with fifty tons of high-octane aviation fuel as deck cargo. This meant the warship could not fire its anti-aircraft guns because of the danger of flash-fire, and the captain was – unsurprisingly – eager to see the back of the RAF contingent as soon as possible, particularly as Åandalsnes was now under almost continuous air attack. In the absence of M/T, horse sleighs were commandeered to move supplies from the shore-line of the lake through half a mile of deep snow to the landing strip, and the squadron tradesmen had to work entirely in the open, fully exposed to both the elements and enemy attack, after the fighters arrived on the evening of 24 April. The lack of spares and proper equipment meant the Gladiators had to be refuelled by hand, using milk jugs borrowed from local farmers, and the starter carts were unusable, because no acid had been brought for the batteries. Additionally, there was no observer screen or means of communication, so effective command and control was impossible and sorties would be purely reactive, flown in response to the arrival of *Luftwaffe* aircraft overhead.[21]

Given the scale of these problems, the commanding officer, Squadron Leader Donaldson, decided that he could not provide any support for the Army, but 'that squadron aircraft must be used solely for the defence of its very existence.'[22] Thus far from contributing in any material sense to the joint campaign, the air component would be employed purely in a battle for its own survival. Donaldson's bleak analysis proved to be well-founded, because German bombers began to attack the landing ground in relays from dawn onwards.

Donaldson later claimed the raids began so early because of poor operational security, as he had overheard Wing Commander Keens, who was responsible for the administration of the small air component, using an open telephone line to report the Squadron's arrival, numbers and location the previous evening. He was also not surprised that the air headquarters at Åandalsnes was bombed, as it was un-camouflaged and marked 'RAF HQ' in large white letters.[23] The Gladiators' carburettors had iced up and the flying controls frozen solid overnight, so only two aircraft could be scrambled initially when the *Luftwaffe* began to attack at first light. Despite the servicing problems and constant raids, nearly forty sorties were flown on 25 April, but only five aircraft survived the day. A few missions were flown on 26 April, but only one damaged Gladiator with no fuel was left by the evening; this was burned and the remaining personnel evacuated on 27 April. The Squadron

had been destroyed after just two traumatic days of operation; forty-nine missions had been flown and six kills claimed (post-war analysis indicates that two Heinkel He 111s were destroyed),[24] but little had been achieved other than the diversion of some of the *Luftwaffe's* bomber effort away from the British forces in the field. The Squadron's withdrawal was equally dramatic, as the ship evacuating it was repeatedly bombed and strafed, and one of the pilots was badly wounded by bomb splinters as he helped man an anti-aircraft gun.

By now, German air power had achieved a psychological dominance that repeatedly shattered the moral cohesion of the British force. This aspect of air power is a subject of real contemporary interest, with 'shows of force' by fast jets proving their value as a means of coercion or deterrence in recent operations in both Iraq and Afghanistan.[25] In Norway, British soldiers and airmen were completely unprepared for the effects of concentrated bombing and, as in Poland, the Ju 87 *Stuka*, with its wailing air siren, was particularly effective in generating an impact on morale out of all proportion to the actual physical damage it was able to inflict.

For example, on 25 April many of No.263 Squadron's ground crews abandoned their posts following the raids at Lake Lesjaskog, and could not be induced to return to duty despite the example set by the pilots, who had to refuel and rearm their own aircraft between sorties. Pilot Officer Purdy's experience was typical. His face and hands were badly burned when his aircraft was bombed and strafed while he was sitting at cockpit readiness, but refusing treatment, he insisted on staying to help service and start up two other aircraft while the ground crew 'crouched in the woods.' [26] He then manned an abandoned machine-gun to provide covering fire as the Gladiators took off in the teeth of another German raid. The historian Bernard Ash excuses the ground crews' behaviour on the basis that:

They were not truly even soldiers at all: they were tradesmen, theirs was the problem the R.A.F. has had to face as the only one of the three services in which only a small elite go into battle.[27]

The premise that the bulk of the RAF is effectively composed of civilians wearing a blue uniform has been an enduring source of frustration to generations of the RAF's leadership, and is clearly unsustainable in the current operational context, where there may be no obvious front-line or safe rear areas. The 'war-fighter first, specialist second' philosophy (initially adopted following experiences in Bosnia in the 1990s, and subsequently reinforced by the need to meet the greater demands of Iraq and Afghanistan) is a recent effort to address this problem; it explicitly acknowledges the requirement in contemporary, non-linear battle-spaces for all personnel to be trained and psychologically prepared to be able to defend themselves and continue to operate, even in the most hostile of environments.

In Norway, the problem was magnified by the decision to send non-formed unit personnel to act as squadron tradesmen. The ground crews were 'strangers to the squadron',[28] and this denied No. 263 Squadron the spirit and unit ethos

that might have acted as an antidote to the shock of combat. Wing Commander Keens acknowledged this in his after-action report: 'instead of sending a 'scratch' servicing party, it would be better if the squadron provided its own key servicing personnel and equipment, to be augmented according to the particular requirements of its destination.'[29] The current 'Expeditionary Air Wing' construct is a contemporary response to the enduring problem of integrating non-formed unit personnel into composite formations, and seeks to reinforce overall cohesion by providing a tangible operational focus for disparate force elements lacking their own unit identities.

The Army was equally prey to panic induced by aerial attack. The RAF liaison officer at Åandalsnes, Squadron Leader Whitney-Straight (ironically, himself later seriously injured in a bombing attack), observed that 'to begin with, the braver British officers and men made an attempt to carry on, despite the bombs. This was soon abandoned, and all ranks took to the woods and cellars as soon as any aircraft approached…I would say that the average man can stand no more than one week's bombing, as experienced at Åandalsnaes, before his nerves are affected.'[30] The British experience at Åandalsnes demonstrates that the psychological domination imposed by air power is potentially at the heart of its utility as a tool of coercive military force; yet subsequent events in Norway, and later in France, indicate that this effect may quickly evaporate. The first experience is visceral, but the target audience may quickly become desensitized with increasing exposure as the novelty of air attack wears off: Terraine comments that 'before the year was out, airmen, sailors , soldiers and civilians would all display a fortitude far beyond what the squadron leader predicted.'[31] It would appear, therefore, that non-kinetic air power effects can be overplayed, unless the fear of air attack is leavened with periodic demonstrations of its actual physical lethality; and there is no reason to assume that the human psychology underpinning this phenomenon has changed fundamentally across the intervening seventy years.

The Commander-in-Chief of the Expeditionary Force, Lieutenant General Massy, considered the destruction of No. 263 to be decisive.[32] The deployment of the fighter squadron had represented the only realistic prospect of preventing the total destruction of Namsos and Åandalsnes by the *Luftwaffe*, and there was now a real danger that if the ports were rendered unusable, his lines of communication would be cut completely, making evacuation impossible and total surrender inevitable. Massy therefore recommended immediate withdrawal to the Chiefs of Staff as soon as he heard of the fate of the Gladiator squadron. With their approval, the evacuation began the next day, just two weeks after the first naval party had landed.

The RAF attempted to mitigate enemy air activity during the evacuation by bombing the German-held airfields, but the results were negligible. Stavanger-Sola was attacked regularly, while a few sorties were also flown against Oslo-Fornebu and the Danish airfields of

Aalborg and Rye. The heaviest raid was on 30 April, when twenty-eight Wellingtons and Whitleys bombed Stavanger at a cost of five aircraft. This did have some sort of effect, as by 1 May Stavanger was being used for emergency landings only, but the *Luftwaffe* was still operating from its most important bases at Fornebu and Vaernes as it pleased. The RAF also sought to provide a measure of long-range fighter cover, but the only aircraft available were one squadron of Blenheim Mk1Fs, a lashed-up and not particularly successful conversion of the light bomber, and these would have to stage through Setnesmoen to refuel. However, this airfield was put out of action by the *Luftwaffe* before it could be used, so the sweeps had to be flown from bases in Britain. This meant that patrol times over Åandalsnes were strictly limited, and Namsos was completely out of range, so protection here would depend on the Sea Gladiators and Skuas carried by *Ark Royal* and *Glorious*, which were due back on station on 1st May.[33]

At Åandalsnes, the evacuation proceeded as planned, although this was more a function of the *Luftwaffe's* inactivity rather than Bomber Command's ineffectual attacks on its airfield or the scant protection offered by the few Blenheim sorties; the Germans were apparently simply caught by surprise. But in a breach of operational security strangely reminiscent of the BBC's announcement of the attack at Goose Green before it had taken place in the 1982 Falklands Conflict,[34] the British Prime Minister, Neville Chamberlain, announced the successful withdrawal from Åandalsnes in parliament on 2 May, before de Wiart's force at Namsos had even begun to embark. Unsurprisingly, the Germans inferred that if Åandalsnes had been evacuated, withdrawal from Namsos would follow, so the port was subjected to intense air attack. This forced the two aircraft carriers to withdraw, depriving the force of any air cover whatsoever. In the event, the Allies were probably lucky to lose only two destroyers (the French *Bison* and British *Afridi*) to air attack during the evacuation.

The Third Phase: Narvik

The disaster at Lesjaskog had underlined the critical importance of control of the air, and the British sought to address this as a priority for *Operation Rupert* at Narvik. A substantial land-based air component of four squadrons was originally planned, with support including a balloon squadron, an air-stores park, repair and supply units and the protection of over 200 anti-aircraft guns.[35] The initial Allied landings at Narvik took place on 14 April, but operations only began in earnest on 24 April, and continued for more than a month after the withdrawal of the Allied forces further south. In the interim, the German attack on France began, and it was apparent that a long-term occupation of northern Norway was untenable when every ounce of military effort would be needed to shore up the Western Front. It was decided that Narvik should still be retaken, but Allied forces would then be evacuated after destroying the port facilities to end the iron-ore trade. Clearly, the air effort would have to be scaled back commensurately, but it was determined that No. 263 Squadron, which had quickly been reformed after the debacle in the south, and No.46

Squadron, with its more modern Hurricanes, could still be spared. The thirty-six aircraft detachment was to be known as the RAF Component of the North-Western Expeditionary Force and put under the command of Group Captain Moore. He initially established his headquarters alongside the new joint force commander, Lieutenant General Auchinleck, on the *SS Chrobry*, and later collocated with him on arrival at Harstad.[36] Meanwhile, Moore's senior staff officer, Wing Commander Atcherley, was despatched by Sunderland flying boat to establish a landing ground near Narvik.

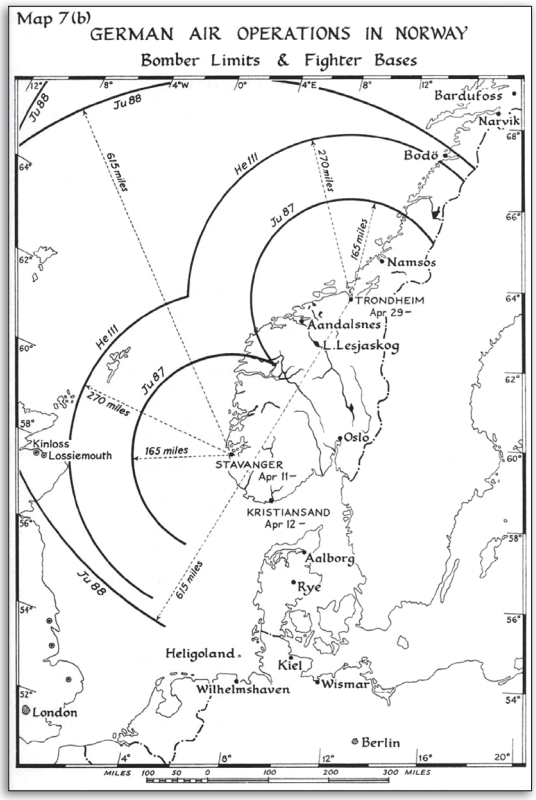
Atcherley's arrival in theatre was inauspicious. He found the existing commander, General Mackesy, in a half-dressed state retrieving his possessions after his headquarters had been destroyed by a *Luftwaffe* raid, while the local Norwegian commander had just heard about the evacuation of Åandalsnes, and indignantly demanded that Atcherley sign a formal undertaking that the RAF would not 'cut and run' before he would speak to him.[37] Undaunted, Atcherley pressed on with his reconnaissance, identifying the existing Norwegian airfield at Bardufoss as the best location. After a broadcast appeal, some 1,000 Norwegians civilians volunteered their services as labourers, and in the almost perpetual arctic daylight, two existing landing strips were cleared of snow five feet deep and extended in length, requiring trees to be felled and the tundra bush cleared. Next, the six-inch ice-layer beneath was blasted away with gelignite so that drains could be dug, before the surface was flattened by a roller made from forty-gallon drums welded together and filled with concrete.

The Air Ministry was determined to avoid a repeat of the fiasco at Lesjaskog, so Atcherley had been warned that force protection was a priority. He directed that taxy lanes be cut into the heart of the woods, so that the aircraft could be properly dispersed in blast-proof pens built from tree trunks and filled with gravel, while ample numbers of even stronger underground shelters were built across the site for the personnel. Everything was carefully camouflaged, twenty miles of road to the nearest fjord was cleared and repaired to guarantee the logistics supply line, and eighteen 3.7-in heavy anti-aircraft guns and twenty-two 40mm Bofors cannon provided protection.[38] This was all accomplished in less than three weeks, despite the food occasionally running out and a lack of tools. Emergency strips were also prepared at Skaanland and Banak (where '1,000 Lapp labourers worked under the inspired direction of one British able seaman');[39] however, the rough surface at Skaanland proved to be unsuitable for the Hurricanes, and Banak was too far away to be used by short-range fighters, so Bardufoss remained the locus of the RAF effort.

Meanwhile, the pilots of No. 263 Squadron, with a fresh supply of Gladiators, had been waiting aboard *Furious* for work on the airfield to be completed. They were finally cleared to fly in on 21 May, but visibility was less than three hundred yards and two of the Gladiators crashed when the Swordfish that was navigating led the first section straight into the side of a mountain. As the weather

worsened, the remainder of the Squadron turned back and was forced to undertake an unplanned deck landing. Fortunately, they were able to find the carrier despite the mist and rain, and all of the survivors managed to land safely. The weather improved the next day, and the Squadron successfully established itself at Bardufoss, flying nearly fifty sorties before the brief Arctic twilight halted operations. Fortuitously, another spell of bad weather deterred immediate *Luftwaffe* intervention, and on 26 May the more capable Hurricane fighters of No. 46 Squadron were flown in from *Furious*, which had returned to Britain to pick them up after disembarking the Gladiators four days earlier.

The RAF had learned from the experience at Lesjaskog that an early warning network was essential, otherwise inefficient standing patrols would have to be flown, or fighters scrambled late in response to the arrival of the *Luftwaffe* overhead. Provision was therefore made to deploy an observer screen, but it was found that the Norwegians already had an effective network in place; what was required was the radio equipment to enable communications. Problems were initially experienced in supplying this, because of the lack of M/T and the inadequacy of the standard-issue radio in Norway's iron-bound mountains, but by the end of *Rupert*, enemy air movements were being reported to the squadrons through the air headquarters at Harstad within two minutes of being detected by the observers.[40] Some thought was given to supplementing the observer screen with radar, but this was abandoned because of the lack of suitable sites and the number of stations that would have been required to provide coverage in the mountainous terrain.



Geographic Realities (2): The Luftwaffe's *ability to influence the battle at Narvik was severely constrained by the distance to its base at Vaernes, near Trondheim*[41]

Subsequent events at Bardufoss demonstrated the threat that a well-established RAF airfield on Norwegian soil posed to German operations.[42] In twelve days of combat, the two fighter squadrons flew over 500 sorties and claimed thirty-seven kills, threatening German control of the air for the first time and prompting real anxiety and debate within the *Luftwaffe* about the

correct employment of air power. At one level, this was a simple function of geography determining the force-space ratio.[43] The Germans were facing exactly the same problems - a lack of bases and the range to the operating area - that had neutered British air operations in the south. The nearest German-held airfield was at Vaernes, and this was small, congested and nearly 400 miles distant, which meant that only the *Luftwaffe's* medium bombers and Bf 110 long-range fighters could reach the Narvik area, in limited numbers only, and for short periods of time. Furthermore, the 110s lacked the performance to compete effectively with the RAF fighters – even the Gladiators - especially as they had to be fitted with heavy and vulnerable belly fuel tanks.

But at another level, the *Luftwaffe* did not help itself. An enduring air power lesson is that achieving control of the air is not enough; it must be constantly maintained after it has been initially attained, and *Luftflotte 5* was guilty of failing to obey this precept after the RAF had established itself at Bardufoss. Instead of concentrating attacks against the airfield, the *Luftwaffe* continued to give priority to direct support for the *Wehrmacht*. This is not surprising, because after the success of the initial amphibious landing, the small German force at Narvik had effectively been cut off by land and sea, so it was utterly reliant on air power for both its logistics life-line and its heavy firepower, especially as it was primarily composed of lightly armed mountain troops. However, air lift missions were hindered by the lack of suitable landing grounds at Narvik, and became completely untenable after the arrival of the RAF fighters at Bardufoss. Although ten Ju 52s landed on a frozen lake, nine were lost through damage or air attack. Air dropping was an alternative, and 387 missions were flown to drop supplies and 600 paratroops to reinforce the garrison, but another thirteen of the vulnerable transports were shot down. Bomber attrition was also becoming unsustainable, and it was finally obvious that control of the air would have to be regained before the Army could be supported effectively. The apportionment and allocation of the air effort was altered accordingly, but Bardufoss was never completely neutralised. Although the RAF could not achieve more than temporary air parity above Narvik, this was sufficient to deny the *Luftwaffe* the freedom of action it had enjoyed in the south, and enabled the Allied operation on the ground to continue to an eventually successful conclusion.

The Final Phase: Evacuation

Although the outnumbered and isolated German garrison was finally pushed out of Narvik on 28 May, by now events in Norway had been completely overtaken by the disaster enveloping the Allies in France and the Low Countries. With *Operation Dynamo*, the Dunkirk evacuation, already in progress, the Chiefs of Staff confirmed their decision to withdraw from Norway as soon as the port facilities at Narvik had been demolished, as 'we need to assemble every available destroyer, fighter squadron and anti-aircraft battery for the defence of the United Kingdom.'[44] Furthermore, they acknowledged that the costs of the operation were outweighing the

benefits, because *Rupert* had 'not obliged the Germans to disperse their forces more than we have dispersed ours.'[45]

The evacuation was marked by the tragedy for which the campaign is now best remembered, at least by the RAF. No. 46 Squadron had been ordered to burn its ten surviving Hurricanes, as it was deemed impossible to land high performance fighters on an aircraft carrier's deck without arrestor gear, especially as none of the pilots had received any training. However, conscious of the desperate need for modern fighters to defend Britain, every pilot volunteered to make the attempt, and 'against all chances and predictions,' all ten successfully landed on *HMS Glorious* on the morning of 8 June.[46] They joined their comrades of No. 263 Squadron, who had flown their Gladiators onto the carrier the previous evening, a slightly less daunting prospect given the biplanes' more pedestrian landing speed and the deck-landing experience the pilots had gained following the abortive attempt to fly into Bardufoss on 21 May. Although the Commander-in-Chief Home Fleet subsequently opined that 'We have made a "false god" of the business of flying on and off a carrier but now it has been done by four R.A.F. pilots in Gladiators at their first attempt and ten Hurricanes have been flown on to a carrier, the matter should be reconsidered,' this remains an outstanding feat of airmanship.[47]

The *Kriegsmarine's* surface fleet had not intervened in Norwegian waters for almost two months, and this had

The ill-fated carrier Glorious*, sunk by* Scharnhorst *and* Gneisenau *with the loss of Nos. 46 and 263 Squadrons on 8 June.*[48]

probably engendered a degree of complacency within the Royal Navy.[49] Certainly, Captain D'Oyly Hughes, commanding *Glorious*, made no attempt to use the carrier's Swordfish to scout ahead and did not even bother to post lookouts,[50] so it came as a total surprise when the German battlecruisers *Scharnhorst* and *Gneisenau* suddenly appeared over the horizon at 1600 hours. With its torpedo-bombers struck below, the carrier was defenceless, and despite the gallant self-sacrifice of the two escorting destroyers, *Ardent* and *Acasta*, *Glorious* was quickly sunk by accurate salvoes from the battlecruisers' 11-inch guns. 1,474 sailors and 41 airmen died in the tragedy, including Group Captain Moore, the air component commander, and all but two of the fighter pilots who had fought and flown so bravely and skilfully: the survivors were Squadron Leader Cross, the commanding officer of No. 46 Squadron, and Flight Lieutenant Jameson, who were both picked up by a destroyer the next morning after

clinging to Carley floats throughout the night.[51]

Poor air-maritime cooperation also contributed to the disaster. Following the security breach that had alerted the Germans to the evacuation at Namsos, the Admiralty wanted to keep the withdrawal from Narvik as secret as possible; but this was taken to such extremes that Coastal Command was not informed that the operation was in progress until after *Glorious* had been sunk, when it had Hudson and Sunderland maritime patrol aircraft available that could have detected the German battle squadron. Roskill comments that 'not for the first time does excessive secrecy appear to have hampered efficiency,'[52] and getting this balance right proved to be an enduring problem that the British found peculiarly difficult to resolve in subsequent operations.[53]

The Reckoning

The Germans forces lost 3,800 killed and 1,600 wounded in *Weserübung*, light losses in the course of a highly risky endeavour that achieved an important strategic advantage. The Allies (Norwegian, British, French and Polish) lost a total of 3,500 men in the land fighting and another 2,500 at sea, and 400 Norwegian civilians also died. The Royal Navy's losses were significant but sustainable, given its overall strength; in contrast, *Weserübung* was a pyrrhic victory for the *Kriegsmarine*. The surface fleet never recovered from the losses it experienced, and this had two consequences: first, in the absence of a credible surface capability, large-scale submarine warfare was adopted whole-heartedly, intensifying the Battle of the Atlantic; and second, control of the air would now be absolutely critical for any putative operation against England, because the *Luftwaffe* would have to take sole responsibility for protecting an invasion fleet from the Royal Navy, as the post-Norway *Kriegsmarine* was clearly now incapable of doing so. Whether an invasion was feasible or not would therefore depend totally on the outcome of the impending Battle of Britain.

In the air, *Luftflotte 5* lost about 100 combat aircraft and 80 transports, or about 15% of the total force committed to battle. This was unwelcome wastage, given the greater importance of *Fall Gelb*, but at this stage of the war, sustainable. The RAF lost 112 aircraft in total, including the fighters that went down with *Glorious* and the thirty-one aircraft lost by Bomber Command from the 782 sorties flown in the Scandinavian theatre before it was diverted to support the battle in France after 10 May; the results of these raids were negligible.[54]

Positive outcomes were few. The aim had been to demolish Narvik so comprehensively that the port would be unusable for at least a year, but in the event, the Germans made the first iron ore shipments through the harbour within six months. However, an unforeseen bonus of real strategic significance was the *de facto* acquisition of the Norwegian merchant marine - then the second largest fleet in the world - and this proved to be a key factor in providing a bare margin of numerical strength during the Battle of Atlantic. At the grand-strategic level, the campaign had immediate and important ramifications. Terraine notes that

'Churchill's predilections for forlorn endeavours in remote places were high among his weaknesses as a war leader,'[55] and the fiasco of the British campaign, 'with its missed opportunities and squandered victories' might reasonably have been laid at his door. But in the famous 'Norway Debate', Conservative MPs refused to back Neville Chamberlain, leading to his resignation and, ironically, Churchill's appointment in his stead. Serendipitously for the new prime minister, the full political consequences of the debacle in Norway were masked by the disaster in France that began to unfold on the very same day, 10 May, and in the developing crisis of the summer of 1940, the mismanagement of the Norwegian operation did not attract the critical scrutiny it would otherwise have merited.

Enduring Air Power Lessons?

Few operations illustrate with quite such precision the strengths and attributes of air power: the absolute and fundamental importance of control of the air; the peculiar psychological dominance it can impose; the ability to decisively influence the joint campaign through the integration of all four air power roles; and its function as a force multiplier, providing the mobility and firepower to enable small forces to generate much greater effects. However, the Norwegian campaign also highlights the constraints on air power, and its dependencies: particularly the tyranny of distance and time, the need for adequate force protection, and the absolute requirement for appropriate logistics support and suitable basing.

Arguably, Norway witnessed the first completely conclusive employment of air power. As the RAF's official history comments, while 'the primary and overriding importance of air power was not new as a conception… it was new as a fact,'[56] and a fact that was so plain that for the first time, it was properly understood and acknowledged by both the Army and the Navy. The Commander-in-Chief Home Fleet wrote in his post-action report that his 'ships could not operate in proximity to shore bases operating air forces virtually unopposed in the air…as the campaign progressed, the counter became apparent, viz., the presence of friendly fighters',[57] while even before the evacuation of south-central Norway, General Massey reported that 'the dominating factor in this campaign has been air superiority.'[58] What was abundantly clear was that it was the *Luftwaffe's* control of the air that had permitted it to dictate the course of the campaign other than at Narvik, where two squadrons of RAF fighters had held the line against an opponent operating at long range.

This emphasises a point that is particularly timely, because in the current defence debate, a line of thinking has developed that assumes Western air superiority as a free good that will somehow be provided as part of the global commons.[59] Sacrificing the RAF's ability to gain control of the air would be a highly risky strategy based on this dangerous assumption, and the Norwegian experience clearly demonstrates the acute vulnerability of a joint force without air cover - even to relatively unsophisticated air weapons. This lesson was reinforced during the Falklands Conflict in 1982,

which shares several other features with Norway 1940, not least the risk that was accepted in mounting an operation in the knowledge that the level of air support was, at best, marginal. In Norway, this fatal disadvantage was acknowledged explicitly; indeed, this gives the campaign its special interest, for as the Air Historical Branch narrative notes, 'it is rare in war that dangers that have been anticipated correspond so exactly to the dangers that eventuate.'[60] But with the strong political imperative to mount the operation in any case, an unrealistically optimistic view was taken of the available palliatives, particularly the fleet's ability to defend itself with anti-aircraft fire, and the effects that Bomber Command might achieve against enemy-occupied airfields.[61] Again, there are clear parallels with the Falklands, where there was misplaced confidence in the fleet's anti-aircraft missile systems and an expectation that bomber sorties, conducted in small numbers and at extreme range, might render enemy airfields unusable.

Once control of the air had been achieved, for the first time in modern warfare the Germans demonstrated how each of the other three air power roles – intelligence and situational awareness, air lift and attack – could be exploited to the full, decisively influencing the outcome of events. Richards charts the range of kinetic and non-kinetic effects generated by *Luftflotte 5*:

They influenced the battle by reconnaissance activities, by bombing and machine-gunning, and even by the mere threat of their presence; our lines of communication were at their mercy; and they put two of our bases virtually out of action. A more novel employment of aircraft was their use to drop paratroops, though this was done only on a small scale in Norway; to land reinforcements on captured or improvised landing grounds or by seaplane on the fjords; and especially to supply food and munitions to troops in forward areas, notably the garrison of Narvik.[62]

Here, the genesis of many of the key attributes of air power that are prized so highly today is clear: the ability to act as a force multiplier *par excellence*, creating tempo by providing mobility and firepower to small or isolated forces; the psychological domination imposed, so that even the presence of aircraft may achieve an effect; the importance of reconnaissance in building situational awareness; and when necessary, the unparalleled generation of destructive force, both in direct support of the Army, and in shaping the battle-space, through interdiction of bases and supply routes.

The RAF was not disposed to introspection in 1940. With the disaster in France and the drama of the Battle of Britain totally eclipsing the end of the Norwegian campaign, there was little time and absolutely no appetite for a formal enquiry. Clearly, lessons were learned within the campaign, as a comparison between the approaches adopted at Leskajog and Bardufoss demonstrates, but there is little evidence that experience was assimilated and applied to other campaigns. Norway forms the left-hand panel in a triptych of disastrous expeditionary operations, followed by France 1940 and Greece 1941, which all share common features: an

inadequate organisational structure that did not provide the necessary logistics support to enable an air component to operate effectively in the field, particularly during mobile operations; the employment of second-line equipment, such as Gladiators, Hurricanes, and Tomahawks, for the critical control of the air task, rather than the RAF's best fighter, the Spitfire;[63] the failure to establish a deployable air defence system to control fighters on expeditionary operations; and the mono-functional command structure, which meant there was no ready-made organisation available to integrate fighter, bomber and reconnaissance operations coherently, or to provide a focal point for the air-land and air-maritime cooperation necessary in a joint campaign.

It is no coincidence that these failures abroad straddle Fighter Command's shining success in the Battle of Britain in the high summer of 1940, as this was exactly the single-role, strategic air operation that the RAF had been led by interwar policy to expect, plan and prepare for. It was therefore able to fight with its best equipment, from well-found, permanent bases with a secure logistics chain, benefiting from a sophisticated command and control network to direct its activities, and with no requirement to cooperate either with the other commands, or indeed the other fighting services.

With hindsight, it is easy to criticise the RAF of 1940 for learning too slowly, and replicating the mistakes that were made in Norway in France and then later in Greece; indeed, it took Tedder's empirical work with the Western Desert Air Force to finally establish the precepts required for the successful delivery of tactical air power in joint operations. This slow progress may be because air forces are unusually prone to what may be described as an anti-doctrinal bias,[64] manifest in a reluctance to formally codify operational experience. In this respect, the RAF of today cannot afford to be complacent, and arguably more could - and should - be done to capture the lessons of recent operations in Iraq and Afghanistan more rigorously, as the validity of current doctrine in changing conditions cannot be assessed unless it is tested against a baseline of historical experience. It may be invidious to cherry-pick lessons from history, but while the character of warfare may change, human nature – and therefore the essential nature of warfare itself – arguably does not.[65] The Norwegian campaign may have been fought seventy years ago, but when Terraine asserts that 'brutal reality would teach that in a large country with poor communications and notorious weather, air power was decisive,'[66] he could equally be writing about current operations in Afghanistan. The final word may, perhaps, best be left to Lieutenant General Auchinleck, whose summation of the Norway campaign is pertinent and equally timeless:

The predominant factor in the recent operations has been the effect of air power … the first general lesson to be drawn is that to commit troops to a campaign in which they cannot be provided with adequate air support is to court disaster.[67]

Notes

[1] Denis Richards, *Royal Air Force 1939-45 Volume 1: The Fight at Odds*, (London: HMSO, 1953), 77.

[2] John Terraine, *The Right of the Line*, (London: Spectre), 684.
[3] See, for example Joseph Kynoch, *Norway 1940: The Forgotten Fiasco*, (Shrewsbury: Airlife, 2002).
[4] Illuminatingly, The RAF currently defines air power in terms of 'influence' and identifies the four air power roles as control of the air, intelligence and situational awareness, air lift, and attack, with control of the air as the essential perquisite; this provides a useful framework for analysis of the *Luftwaffe's* contribution in Norway. *AP 3000: British Air and Space Doctrine*, (London: MOD, 2009).
[5] David Brown (ed.), *Naval Operations of the Campaign in Norway*, (London: Frank Cass, 2000).
[6] Quoted in Douglas Dildy, *Denmark and Norway 1940*, (Oxford: Osprey, 2007),30.
[7] Image courtesy of Norwegian government archives.
[8] Dildy, 35.
[9] Terraine, 115.
[10] Richards, 78.
[11] Roskill, *The War at Sea, Volume 1* (London: HMSO, 1952), 98.
[12] COS (40)304(S) 25 Apr.
[13] COS (40)304(S) *A Review of the Campaign in Norway*, 12.
[14] AHB/11/117/4, *The Campaign in Norway*.
[15] Guy Gibson, *Enemy Coast Ahead*, (London: Crecy, 2006), p.63.
[16] *Ibid*.
[17] T K Derry, *The Campaign in Norway*, (London: Naval and Military Press, 2004).
[18] Richards, 86.
[19] II/H5/1/96, *Report on the Activities of 263(F) Squadron*.
[20] Richards, 89.
[21] Dildy, 69.
[22] AHB/11/117/4, 63.
[23] II/H5/1/96.
[24] Christopher Shores, *Fledgling Eagles*, (London: Grub Street, 1991).
[25] CAS RUSI speech.
[26] Bernard Ash, *Norway 1940*, (London: Cassel, 1964).
[27] *Ibid*.
[28] *Ibid*.
[29] II/H5/1/96.
[30] AHB/11/117/4, 68.
[31] Terraine, 116.
[32] Richards, 93.
[33] *Ibid*.
[34] 'How the Falklands War was won', *The Daily Telegraph*, 27 March 2007.
[35] Norman MacMillan, *The RAF in the World War, Volume 1 1919-1940* (London: Harrap, 1942), 196.
[36] Didley, p.77.
[37] Richards, 96.
[38] Macmillan, 208.
[39] Richards, 98.
[40] AHB/11/117/4, 87
[41] Derry.
[42] Adam Claason, *Hitler's Northern War*, (Kansas: University Press, 2001), 125.
[43] Philip Sabin, 'The Counter-Air Contest', in Andrew Lambert & Arthur Williamson (eds.), *The Dynamics of Air Power*, (Bracknell: RAF Staff College, 1996)
[44] COS (40)304(S).
[45] *Ibid*.
[46] Terraine, 78.
[47] Letter from C-in-C Home Fleet to Secretary of the Admiralty, 15 June 1940, TNA ADM 199/479.
[48] Picture courtesy of **www.royalnavy.mod.uk**
[49] Roskill, 195.
[50] Didley, 84.
[51] *Ibid*.
[52] Roskill, 198.
[53] See, for example, Alistair Byford, 'Executive Fuller: The RAF in the Channel Dash', *Air Power Review*,Vol 12,

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[54] J.L.Moulton, *The Norweigan Campaign of 1940*, (London: Eyre and Spottiswood, 1966), 260.
[55] Terraine, 79.
[56] Richards 105.
[57] Brown, 134.
[58] COS (40)304(S) 25 Apr.
[59] See for example, Sir Stephen Dalton's lecture *Dominant Air Power in the Information* at the International Institute for Strategic Studies, 15 February 2009.
[60] AHB/11/117/4, 101..
[61] Richards, p.98.
[62] *Ibid*.
[63] Robin Higham and Stephen Harris (eds.), *Why Air Forces Fail: the Anatomy of Defeat*, (Lexington: University of Kentucky Press), 335.
[64] Bruce Curry, 'Turn Points in Air' (Unpublished thesis, Air University, Maxwell Alabama, 1997), vii.
[65] *The Future Character of Conflict*, (London: Ministry of Defence, 2009), 2.
[66] Terraine, 78.
[67] Richards, 93.