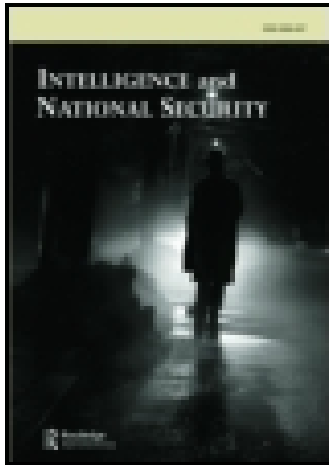


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# The Role of Intelligence in Deciding the Battle of Britain

SAMIR PURI

*The successful employment of German air power in the Battle of Britain was greatly hindered by abysmal intelligence. The Luftwaffe never developed an accurate picture of enemy strengths and weaknesses, and this contributed to preventing it from bringing force to bear at the decisive point of battle. Although certain aspects of British intelligence were equally flawed, it ultimately proved itself to be an indispensable adjunct to the operational success of Fighter Command. This article focuses on the contribution made to Luftwaffe and RAF operations during the Battle of Britain by their respective intelligence gathering institutions. It is an investigation into the extent to which activities in the realm of intelligence can explain the eventual British victory.*

In 1944 the German Air Historical Branch published a retrospective report on the Battle of Britain. It offered the following judgement: 'One may draw the conclusion that the decisive factor in this war is not so much the weight of the material used, as a High Command who knows how to use it best'.<sup>1</sup> Had this message, that the direction of force can be as vital as force itself, been heeded four years earlier then Luftwaffe efforts may not have floundered as they did. This article will investigate the extent to which the Battle of Britain was determined by the use and misuse of intelligence. It will do so by investigating the German and British experiences in turn. The first step will be to consider how the type of combat operations being undertaken by each combatant determined their respective intelligence needs. The Luftwaffe and the RAF were faced with contrasting intelligence priorities, and establishing these will provide an important measure for subsequent success and failure. Next, the strength of each side's intelligence gathering institutions will be examined, and then evaluated through their contribution to the planning and undertaking of operations. In conclusion, the experience of both combatants will be considered in order to answer these questions: How influential were activities in the intelligence realm on the respective performance of each

combatant in the Battle of Britain? And to what extent does this explain the eventual repulsion of the Luftwaffe by the RAF?

The Battle of Britain has been the subject of numerous historical studies over the years. The intelligence dimension has received some strong treatments, especially during the flurry of academic activity that surrounded the Battle's fiftieth anniversary.<sup>2</sup> This article builds upon past research, but will also emphasize the thematic worth of the episode as a case study for the intelligence audience. The Battle of Britain was something of a peculiarity in that combat occurred exclusively in the air and was fought by two tiny airborne military elites, albeit with extensive ground support apparatus. It was a struggle of attrition: if either side suffered unsustainable losses in pilots or planes it would be forced to suspend operations. If this fate were to befall the RAF then Britain would be invaded, but if the Luftwaffe were rendered incapable of sustaining offensive operations, then the German invasion would be suspended. The Battle presents us with clearly defined notions of offence and defence, and, as such, is an incisive illustration of the contrast between the intelligence requirements of an attacking force and a resisting force.

The Battle of Britain is also an excellent illustration of how, in certain circumstances, intelligence can exert a very significant impact upon martial activities. The words of Michael Handel are a succinct description of the potential impact that intelligence can have on military operations:

Overall, good intelligence will act as a force multiplier by facilitating a more focused and economical use of force. On the other hand, when all other things are equal, poor intelligence will act as a force divider by wasting and eroding strength. In the long run, therefore, the side with better intelligence will not only use its power more profitably but will also more effectively conserve it.<sup>3</sup>

It is worth spelling out the finer point made in the quotation: however accurate the flow of information may be, it is useless without sufficient force to exploit it. Good intelligence can facilitate the deployment of military assets on favourable terms, but it cannot fight the battle. Although this assertion is undeniable, this study will argue that the specific characteristics of the Battle of Britain scenario amplified the effect intelligence could have on the conduct of both combatants. Neither possessed a favourable enough position to simply steamroller its way to success: while the RAF suffered well-documented constraints in its front line resources, the Luftwaffe faced major operational difficulties of its own that will be explained below. Both air forces were hard pressed to bring decisive force to bear, resulting in a narrow margin between the two belligerents. This meant that successes and failures in the intelligence realm could potentially exert a greater influence than

normal on proceedings. As the Battle wore on, British victories in the intelligence sphere altered the balance between the two air forces by tipping the odds in favour of the RAF. Firstly, the element of German surprise was overcome, and, secondly, the thinly stretched resources of the RAF were husbanded. Although it is vital never to overstate the importance of intelligence, the following analysis will make the case that its impact on the outcome of the Battle of Britain was a very significant one.

#### GERMAN INTELLIGENCE IN THE BATTLE OF BRITAIN

##### *The Luftwaffe*

In the summer of 1940 the German military was on an undeniable high. Such was the speed of their victory in France, all existing military timetables assuming a prolonged and static Western European conflict had to be scrapped. Hitler had planned no further than defeating France but, flushed with such rapid success, his immediate expectation was for Britain to bow before the new European power balance. Met instead by Churchill's intransigence, General Halder observed in his diaries that 'the Fuehrer is greatly puzzled by Britain's persisting unwillingness to make peace'.<sup>4</sup> The Battle of Britain was thus an unexpected and indeed undesirable tumour that had sprung from the otherwise healthy Western campaign. On 16 July 1940, Hitler issued a directive ordering the assault on Britain. Responding to their new task, the German military concluded that air superiority over the Channel and southern England was an essential prerequisite for a sea-borne assault. This was a task Herman Goering welcomed with confidence. The destruction of enemy air power by his Luftwaffe had opened each campaign from Poland to France and there was little doubt that it would prove equally potent against the RAF.<sup>5</sup> General Quade, a former Air Staff college chief and a noted authority on air strategy, captured this ebullient mood in a radio broadcast. Germany had won through conquest the entire stretch of coastline from Norway to the Bay of Biscay, leading Quade to conclude that:

The vital factors in aerial warfare are the distance from aerodrome to objective and the nature of this distance . . . the situation as it presents itself for our Air Force for the decisive struggle against the British is as favourable as can be. Splendid isolation is a thing of the past. England is an island no more.<sup>6</sup>

The reality of the task was quite different. The Luftwaffe was undertaking the first dedicated strategic bombing campaign in the history of warfare, a task for which it was materially and doctrinally unprepared.<sup>7</sup> As with all great

military-technical innovations in their formative years, initial confusion surrounded the best employment of air power. Some argued that bombing was the natural successor to the naval blockade, and that it ought to be used to destroy an opponent's industrial base. Others touted bombing as a terror weapon that could be unleashed against enemy populations. Instead, the Luftwaffe evolved as a close-support force to the Wehrmacht. Many of its air staff were recruited from the army, bringing to it their unashamedly Clausewitzian principles: 'The foremost goal in war is to destroy the enemy armed forces . . . it is the task of the air force in leading the war in the air within the wider framework of the whole war, to serve this goal'.<sup>8</sup> Subsequent investment reflected this slant, with dive-bombers and medium bombers dominating production. The first Luftwaffe Chief of Staff had in fact approached both Junkers and Dornier to manufacture a prototype four-engined heavy bomber, but the programme died with him in a 1936 flying accident.<sup>9</sup> Even single-engine interceptors suffered due to the tactical conception of airpower, and dog-fighting ace Adolf Galland later complained that 'the provision made for fighters was insignificant'.<sup>10</sup> The British were hence astute to report the coming campaign over their skies as a something of a watershed for the Luftwaffe: 'A conspicuous feature of the war has been the close cooperation of all three German services . . . the German Air Force has entered upon its supreme test . . . acting as the spearhead of both the land and naval forces.'<sup>11</sup>

The intelligence requirement generated by a strategic air campaign would be far greater than that of a cooperative tactical campaign. In an army-versus-army engagement the target clearly presented itself as the opposing military, and this had been the Luftwaffe experience when fighting on the continent. Now it was faced with bombing a relatively tiny enemy air force that had been dispersed throughout an entire country. The enemy centre of gravity was far less obvious, and much planning would be required in order to determine which targets ought to be struck, and with what intensity, in order to bring about the British collapse. This would demand the judicious use of intelligence at every decision-making level: tactically speaking, so aircrews could bomb as efficiently as possible; operationally speaking, so commanders could direct the required level of force to the appropriate targets; and strategically, so Hitler and Goering could monitor the aggregate effect of bombing. This was not a task either the Luftwaffe or its meagre intelligence apparatus was prepared for.

### *Intelligence and the Third Reich*

The fortunes of German Air Intelligence, formally the 5th Department of the Luftwaffe General Staff (D5), are a stark illustration of the dubious position intelligence held within the Third Reich. Established in January 1938 and headed by Colonel Josef Schmid, D5 generated a woefully inadequate flow of

operational information during the Battle of Britain. In making sense of its failures, one must appreciate that D5 was very much a product of its environment.

By virtue of Germany's unfavourable geostrategic position – surrounded by potential foes to the east and west – its military thinkers believed that victory would be granted by taking the fight to their foes. The strategic doctrine that evolved was based upon their interpretation of Clausewitz, that the offensive must be used to overpower the enemy. Here lay the doctrinal roots of Blitzkrieg warfare. It was a concept that did not profess to require a major intelligence input. Whilst knowledge of the enemy could be useful, it could also be substituted with sheer physical strength.<sup>12</sup> This was exemplified in planning the French campaign, where military instinct and genius exerted a greater input than hard facts.<sup>13</sup> The institutional bias against intelligence had two important consequences. Firstly, intelligence became a vastly under-funded enterprise because men and munitions were always seen as a far sounder monetary investment. Secondly, intelligence was frequently relegated to the role of a bargaining chip in the bureaucratic anarchy of the Third Reich. Rival departments 'hoarded it and peddled it' to justify their own worth in the face of competition for the Reich's more prestigious mandates.<sup>14</sup> Seeking the truth for truth's sake had become secondary to reflecting the will of the Fuhrer, and intelligence was often gathered with the intention of transforming his often vague policy utterances into reality.

The 5th Department was very much a casualty of this environment. It was reliant on numerous rival agencies for much of its input, including the German Signals Intelligence Service, the Foreign Air Armaments Branch for technical information, and so on. This bewildering array of departments worked with frequent duplication and much rivalry, and there existed no over-arching authority to collate their work. Size was also a concern. The D5 office was far too small to serve the needs of the largest air force of its day, and consisted of a mere 29 individuals at the outset of the war. They were often seconded from other duties on the sole basis of their linguistic skills. They did not receive any substantial re-training for their new job because a basic manual in intelligence work did not exist. Schmid himself was formerly an army officer and had no air force, intelligence or even languages experience. He had been recruited on the strength of his party connections, belonging to the 'old guard' present at Hitler's legendary 1923 Putsch in Bavaria. However, most damning of all was the subordination of intelligence officers by rank to the operational staff they served. A clear pecking order emerged in which field officers made their decisions based on tactical expertise and consulted intelligence if and when they wanted. No official mechanism existed to regulate this relationship.<sup>15</sup>

The Luftwaffe was conceived as an offensive military asset and there was considerable neglect of the auxiliary elements essential to constructing a balanced and flexible force.<sup>16</sup> Logistics, science, economics, industrial production and other such factors were derided as civilian concerns and intelligence was dumped into the same category. Indeed, D5 was often also tasked with press releases, propaganda censorship and even troop welfare. Truly, they were 'the maids of all work' within the Luftwaffe.<sup>17</sup> This being the case, it was inconceivable that intelligence would ever directly assist decision-making at any level. The intelligence cycle of accumulation, analysis, dissemination and policy formulation simply was not institutionalized into the functioning of the Reich at any level. Militaristic anti-intellectualism saw to its diminished role. A totalitarian monopoly on policymaking also contributed to this climate, in that grand strategy was the domain of Hitler alone.<sup>18</sup> Dissenting voices were not welcome.

### *Planning the Battle*

Blissfully unaware of such debates, D5 set about its job of gathering data on foreign air forces. Schmid divided the officers under his charge into three groups to study a range of countries, and created a fourth group to study aircraft types. As the war clouds thickened, D5 was tasked with compiling folders of potential bombing targets. The major sources for these reports were officially published maps and handbooks from the country under examination, and the monitoring of its media outlets.<sup>19</sup> Photographic reconnaissance and signals intelligence often had to be appropriated from other departments. The use of spies was virtually absent – British authorities successfully broke the German spy ring and even arrested some individuals as they parachuted onto the island.<sup>20</sup> Let us analyze the preparatory efforts of D5 by considering each of its three major pre-Battle publications.

The *Studie Blau* was published in July 1939 and was the first real attempt to collate all available information on Britain. At 94 pages long it achieved a wide coverage of topics. It would be the first and last report D5 produced in consultation with trade, industry, and technology experts, owing to future personnel shortages.<sup>21</sup> Such an impressive basis of expertise could not prevent the report's military observations from being rampantly optimistic. The air capacity of the Western powers was described as 'inadequate to catch up with the major advance in the expansion of the air forces achieved by Germany during the next 1–2 years'. This was proved quite false as early as 1940 when Britain produced 15,049 aircraft compared to just 10,247 in Germany.<sup>22</sup> Britain was judged 'very vulnerable from the air', since its air defence would be stretched to 'expose...the rest of the country for the complete protection of the air defence region of Greater London'. There was no information about radar or the nature of the Dowding system at all.



The overall conclusion pulled no punches: ‘the German Luftwaffe is at present superior to any single European air force’.<sup>23</sup>

For Goering the message was nothing short of triumphant – his air force was as deadly as he liked to boast. For the wider audience, the suggestion of British vulnerability from the air had seemingly sunk by the time of an August 1939 staff discussion: ‘[British] Air defence has not made any basic improvements. On the whole, everything is still in *the developing stage, similar to ours in 1934*’, recorded General Halder.<sup>24</sup> It was clearly believed that a window of German superiority existed during which the British could be struck. This was precisely the implication contained in Schmid’s dubious production estimates.

The real significance of *Studie Blau* was in how it seemed to confirm the aspirations of its consumers. As a relatively lowly Colonel, Schmid clearly owed a great deal of goodwill to the omnipotent Goering and the rest of the Luftwaffe General Staff, from which D5 was just a tiny offshoot. Tellingly, when General Felmy of Luftwaffe Air Fleet 2 issued his own sobering assessment of the scenario, detailing how key British ports lay outside of range, and how bombing London may strengthen civilian resolve, he was relieved at the first opportunity.<sup>25</sup> Perhaps D5’s implicit nod to the hierarchy was not a conscious decision, but rather a reflection of how it perceived its mandate within the system. Intelligence existed not to criticize but to get things done.

The second report was published in November 1939, and titled ‘Proposal for the Conduct of Air Warfare Against Britain’. The German war machine was preparing itself for continental warfare, and Schmid busied himself with compiling a prospective bombing plan that would paralyze the British. The theme was the destruction of maritime facilities including key ports, merchant shipping and the Royal Navy. The overall intention was ‘to reduce imports to a level below the rate of consumption, so that reserves will eventually be exhausted’ – in other words the strangulation of the British economy through airborne blockade.<sup>26</sup> All this ‘should begin as soon, and in as great strength as possible’, again reflecting Schmid’s belief that Germany enjoyed a temporary advantage while the British finalized their war preparations.<sup>27</sup> The hypothesis of the report was astute to emphasize that Britain’s maritime supply lines were central to the country’s war-making capacity. Where it failed was in devising a prospective bombing plan that was appropriate to the actual abilities of the Luftwaffe. Its aircraft lacked torpedo bombers or indeed the range to strike several prescribed targets without the benefits of forward deployments in French or Dutch airfields. In any case the report had minimal impact when it was published, as the British question was temporarily eclipsed by the immediate concerns of Operation Yellow.<sup>28</sup>

After the campaign in France had concluded, Schmid was again called upon to report the strength of British defence. His 'Comparative Study of RAF and Luftwaffe Striking Power' arrived in July 1940, and would provide the information basis for the forthcoming German bombing campaign. This seminal document is a staggering example of German intelligence failure, right on the eve of the Battle of Britain. The reader is instantly struck by the overly confident tone of its analysis. This is no doubt reflective of the backslapping atmosphere prevalent after the unimaginably successful French campaign. Schmid's confidence in his own abilities had been bolstered by his accurate prediction of French weakness. His existing beliefs about the British were confirmed by information garnered from defeated French officers, who agreed with Schmid that the RAF was now in a hopeless position.<sup>29</sup> However, this spirit of optimism can only take a portion of the blame for the failure to accurately estimate the British position.

The report's content was characterized by 'a peculiarity', observes Sebastian Cox, in which 'British strengths were identified as weaknesses and weaknesses as strengths'.<sup>30</sup> Section A begins this trend by claiming Spitfires and Hurricanes 'are inferior to the Me 109', something that would soon be challenged by reality. It goes on to claim that the 'Me 110 is inferior to *skillfully* handled Spitfires', when the lumbering twin-engined fighter would in fact be withdrawn due to unsustainable losses early in the Battle. Section B gets off to an even worse start, opening with the unforgivable judgement that for the RAF 'there are no difficulties regarding the number of men available'. The Achilles' heel of the Dowding system was precisely the *opposite* of this claim! Some 300 pilots had been lost over France, and Dowding was already struggling to appropriate replacements from Fleet Air Arm. The mistakes continue into Section D where British production is forecast at 'about 180 to 300 first line fighters... a month'. During the Battle, production would routinely reach over 400 in the coming months.<sup>31</sup> It is likely that Schmid based his estimates on the *Studie Blau* research of the preceding summer, since (as noted above) this had been D5's only real opportunity to work with civilian experts in trade and industry. Moving onto Section E, the claim that 'formations are rigidly attached to their home bases' betrayed a total ignorance of radar and the operational flexibility it facilitated. D5 possessed no targeting information on the layout of radar stations, despite the fact that the masts were clearly visible even to tourists on the south coast of England. Although the Luftwaffe was aware of British radar experiments, its narrow focus on military matters led it to believe that such endeavours belonged in the realm of science and did not merit serious monitoring.<sup>32</sup>

The July study clearly displayed Schmid's poor grasp of the Dowding system. This is attributable to two root causes. Firstly, D5 simply lacked the expertise to understand issues of economics or science, resulting in a failure

to interpret successfully such pivotal factors as aircraft production or radar. Nor did there exist an over-arching intelligence authority to cross-reference its work with that of other departments. Secondly, Schmid clearly shared Goering's belief that the Luftwaffe was simply unstoppable. Such attitudes were fostered by its recent string of victories, but also by the ideology of a Reich that worked by applauding its own superiority. One is not left with the impression that D5 deliberately embellished its reports so much as that it actually believed them. Its skewed interpretations would have dire consequences. Presented with such a frail picture of the RAF, Goering declared that the elimination of fighter forces in southern England would take just four days.<sup>33</sup> It was soon to be apparent that the Luftwaffe had been badly misled.

### *Fighting The Battle*

When evaluating the course of the Battle, it is important to judge German intelligence failure in proportion to other inadequacies such as in leadership and technology. It is also crucial to bear in mind the tenacity of the foe. Nevertheless the failure to focus upon a British centre of gravity would frustrate Luftwaffe efforts throughout the Battle. Although the overall intention of air superiority was clearly stated, no consistent method to achieve this was ever pursued. The general objectives issued by Goering on 30 June illustrated this confusion, calling for: 'attacking the enemy air force, its ground organisations, its own industry', but also for 'attacking importing harbours and their installations, importing transports and warships', and finally 'destructive attacks against industry'.<sup>34</sup> Such vacillation would prevent decisive results from being achieved in any single area. 'First this was tried, then that, then something else, but always on a small scale, with a niggardly use of the means available against a very small part of the British Isles', argued Adolf Galland retrospectively.<sup>35</sup> During that Battle, faulty intelligence contributed to this state of affairs as D5 struggled to produce an accurate appraisal of the changing situation.

Throughout July, probing attacks on maritime targets inflicted scattered results but lacked the strength of effort envisaged by Schmid's 1939 plan to cripple shipping altogether. The Luftwaffe completed its redeployment to face Britain during this period. In August, Goering issued his 'Eagle Day' declaration for the destruction of Fighter Command. This marked the first major phase of the Battle, and between 12 August and 6 September there were 53 main attacks on aerodromes in the south, plus over 1,000 peripheral raids on smaller targets.<sup>36</sup> The impact of bad preparatory intelligence was evident right from the off since just *six* of these attacks were aimed at the backbone of the Dowding system – its radar stations. D5 re-emphasized its ignorance of radar in a 7 August circular: 'As the British fighters are

controlled from the ground by R/T their forces are tied to their respective ground stations and are thereby restricted in mobility.<sup>37</sup> German aircrews claimed to have successfully destroyed radar stations on the opening day, but German Signals Intelligence continued to detect transmissions and believed that the raids had failed. A week later Goering concluded that: 'It is doubtful whether there is any point in continuing the attacks on radar sites, in view of the fact that not one of those attacked has so far been put out of action.'<sup>38</sup> Radar had been let off the hook.

By far the greatest intelligence failure during the Battle was the monitoring of casualties. Both Adolf Galland and Air Marshall Dowding touched upon the issue of corroborating pilot claims. The former described the difficulties of a pilot visually confirming from 6–8,000 metres whether damaged aircraft had in fact crashed.<sup>39</sup> The latter noted that duplicated claims to a single kill were common in larger engagements.<sup>40</sup> Despite the difficulties inherent in the task, Schmid's error of margin was staggering. In a report published on 17 August, a starting strength of 900 RAF fighters was given for 1 July. Employing a rather rudimentary subtraction method, 574 pilots' kill claims and 196 other losses were taken away from this figure. Monthly replacements were still mistakenly being estimated at 300 per month, and adding this gave a running total of 430. Assuming that 70 per cent of these were serviceable, 300 were left, and from these 200 were believed to be in southern England.<sup>41</sup> The reality was that Fighter Command had an operational strength of 672 by 23 August, and this would grow to over 700 in the coming weeks.<sup>42</sup> German intelligence clearly had no idea how the Battle was going. After being fed such reports, the perceptions of Luftwaffe commanders also began to deviate from reality. As August drew to a close Fighter Command was considered a spent force, and the Luftwaffe diversified its attacks to include industrial targets around major cities. Gradually, the path was being paved to the single most momentous German strategic decision of the Battle.

The attack on London in September is often attributed to Hitler's desire for retribution after the humiliating RAF bombing of Berlin. It was also backed by a two-tiered military logic. Firstly, the Luftwaffe believed it could facilitate a final decisive engagement with Fighter Command by forcing its final remnants to defend their capital. Secondly, wrecking Britain's foremost economic centre had the potential to bring the entire country to its knees. The prospect of a knockout blow against London was indeed tempting for the ambitious Luftwaffe, and Hitler's rage at the British effectively sanctioned a strategy that had already been planned.<sup>43</sup> As was the common theme behind Luftwaffe planning thus far, the accuracy of its logic was to be blunted by poor intelligence.

The massive overestimation of Fighter Command losses meant that instead of a final stand, the London attacks actually facilitated a recuperation period

for the embattled fighter aerodromes. The effects were evident as early as 15 September, when a massive London-bound bomber armada met a response of over 300 RAF fighters, and lost 15 per cent of its strength in the process.<sup>44</sup> Clearly these were not the ragged remains the Luftwaffe expected to face at this stage. The bombing of London itself was confused by conflicting intelligence. D5 believed that key economic targets such as the aircraft industry and the dockyards ought to be hit. However, a section of the foreign ministry called for great focus on working-class dwellings in east London, in the naive hope of stimulating social revolution by making the poorest sections of society suffer.<sup>45</sup> Lacking a coherent bombing plan, Luftwaffe efforts were once again divided between a several different priorities. And whatever it chose to hit, the lack of a heavy bomber meant that a relatively meagre tonnage of bombs was actually being dropped. Industrial damage was considerable but never decisive, and civilian morale was to fortify itself against the bombing rather than crumble. In short, London soaked up all that was thrown at it.

With air superiority as unattainable as ever, September saw Operation Sealion delayed, and October saw it postponed indefinitely. The air war against Britain now adopted a momentum quite detached from the original objective of British subjugation. It was permeated by a vague hope that the simple application of continuous pressure would force a result of some sort. The final phase of the Battle included an extension of bombing to the industrial Midlands of Britain. By this stage, operations were already being curtailed with the coming of winter. In mid-October Goering tellingly ordered 'frequent changes of targets... in order to achieve the necessary effect on the population of London and to confront the enemy's defences with a new situation'.<sup>46</sup> In other words the bombing lacked any specific focus and was being maintained simply to exhaust the British. D5 'also ceased to evaluate the air war over Britain in terms of a possible decisive event, and instead considered primarily its effect on the whole war'.<sup>47</sup> The Battle trailed off as gradually as it had begun, and the attentions of Luftwaffe intelligence would soon follow its master eastwards.

## BRITISH INTELLIGENCE IN THE BATTLE OF BRITAIN

### *The RAF*

Britain entered the contest fresh from defeat on the continent, but Fighter Command was in a far from disastrous position – it was being called upon to perform its founding role as defender of the United Kingdom.<sup>48</sup> Defence planning in the 1930s had been conducted under the shadow of airpower, summed up by Baldwin's oft-quoted comment that 'the bomber will always

get through'.<sup>49</sup> Fighters were conceived, first and foremost, for the air defence of Britain. Considerable investment was put into building a defensive system that would either halt incoming raids, or inflict so much damage that they became too costly to continue. In doing so the British government placed great faith in the sphere of scientific innovation. As early as 1934 it invested £10,000 in tentative radar trails, and by experimenting with the efficiency of radio communications. By 1938 radar had achieved a status of considerable reliability. After being coupled with more traditional methods of observation by spotters based on the coast, radar became the lynchpin of the integrated air defence system.<sup>50</sup> The intention was to detect incoming German attacks as early as possible, and then to direct RAF fighter squadrons along an interception route. However, the system was certainly not impregnable. It had been constructed with the expectation of a much lower volume of incoming attacks than proved the case in 1940. German use of French aerodromes so close to Britain could never have been foreseen in the planning stage, and granted the Luftwaffe a much more favourable staging ground.<sup>51</sup> Moreover, the use of radar in this way was without historical precedent, and only trial by combat could test the workings of the system.

Intelligence was utterly intrinsic to the defence being put up by the RAF. The entire system functioned by generating a high level of situational awareness, and this demanded a constant flow of accurate information regarding enemy moves. The British intelligence requirement was typical of any defensive structure, a point elucidated by David Kahn:

Offence and defence enjoin different attitudes toward intelligence. It exists of course in both. But it is essential to victory only in the defence... an army can await a blow only if it believes that a blow is planned, and such a belief can be created only by information about the enemy. There can be, in other words, no defence without intelligence.<sup>52</sup>

The intelligence challenge facing the RAF was precisely this. By choosing to meet Luftwaffe raids head-on, Fighter Command had to be on the tactical offensive. Its pilots required the greatest possible warning time to respond efficiently. The Group Commanders required accurate data on the nature and scale of each raid so that they could prioritize incoming threats and dispatch the correct response. This would prove to be a critically important ability – Fighter Command was very much a finite resource that could not be expended in a single blaze of glory, or else Britain would be left open to invasion. On the subject of numbers, the contest for air superiority was roughly equal, with approximately 800 Luftwaffe single-engined fighters facing the RAF's 700-plus fighter force. This figure discounts bombers, dive-bombers and twin-engined fighters, all of which lacked adequate dog fighting capability to

wrest control of Britain's skies from Fighter Command.<sup>53</sup> However, the RAF had lost fully one-third of its experienced pilots over France and replacing these would be a painstakingly slow process. Many more pilots would die once the Battle began, and the gap created by their loss was the primary source of Fighter Command's woes. The overall managerial task facing Air Marshall Dowding was how best to husband his resources. The RAF intelligence requirement was defined by the economy of force.

### *The Structure of British Intelligence*

Unlike its German counterpart, British wartime intelligence was held in comparatively high esteem by its recipients. This had not always been the case however, since inflated pre-war assessments of the German military had contributed to the political paralysis at Munich. Poor intelligence later befuddled strategic decisions in Norway and France. Part of the blame for these failures rests with the structural inadequacies of inter-war British intelligence, such as bureaucratic overlap leading to infighting, and the perception of intelligence work as a professional backwater.<sup>54</sup> The issues that would later blight Third Reich intelligence were thus already in evidence, but unlike the Germans, the British would strive to overcome the limitations inherent in their system. Understanding this renaissance is the key to understanding how intelligence would come to function during the Battle of Britain.

The first level was institutional restructuring. The potential for coordinating the activities of Britain's many intelligence-gathering bodies was not realized until relatively late in the day. The Joint Intelligence Committee (JIC) was established in 1936, but three years passed before it evolved into the true meeting point for policy-level intelligence. Its eventual form consisted of the heads of intelligence from each armed service plus a Foreign Office representative. Of the numerous lower-level organizations, the Air Intelligence Branch of the Air Ministry was the RAF's most direct supplier. A cursory look at the structure of AI reveals that it enjoyed far greater prestige than the German D5. Its manpower grew from 40 at the outbreak of the war to over 700, many of whom were specialists recruited from outside of the military. Headed by a sufficiently senior Air Commodore, AI possessed the stature to issue reports independently from the Air Staff. It could even criticize the latter's strategy if deemed necessary. AI was structured geographically, with the AI3 sub-section tasked to deal with German matters (although this regional division of labour would be reorganized after 1940).<sup>55</sup>

The second level of restructuring was the accommodation of technological advancements. The British acknowledged the growing centrality of radio communication to military operations. Good provision was made for the

interception and interpretation of enemy transmissions, a process that became known as 'Y'. The RAF's main interception station was based at Cheadle, but its work would be greatly supplemented by the Government Code and Cipher School based in Bletchley Park. Steps were taken in 1938 to ensure that all exploitable information derived from Luftwaffe wireless chatter, regardless of the department collecting it, would reach the Air Ministry.<sup>56</sup> The breaking of the Enigma code was significant because it yielded high-grade interceptions, often between sources of considerable German seniority. Aside from Sigint, another forward thinking development was the 1939 Air Ministry appointment of a Scientific Officer to liaise with the intelligence staff.<sup>57</sup> The incorporation of radar, the increasing use of photographic reconnaissance, and institutional restructuring combined to provide a cutting edge information-gathering apparatus far superior to the German equivalent. The British institutional structure was loose enough to provide great scope for independent thought, but rigid enough to ensure strong connections existed with the wider intelligence infrastructure. The department benefited from a willingness to innovate scientifically, something that greatly enhanced the RAF's eyes and the ears.

#### *Before the Battle*

Like any intricate system it would be some time until problems were ironed out and ideas perfected. A relevant case in point was AI's gross pre-war overestimation of German air power. By applying a worst-case logic to every variable, from aircraft production to bomb loads, AI concluded that 945 tons of bombs could be dropped in a 24-hour period, resulting in 50,000 civilian deaths.<sup>58</sup> These calculations were some 80 per cent off the mark, and created an illusion of German strength that haunted British minds during the 1938 Munich accords. These overestimations stemmed from a lack of technical and organizational knowledge about the Luftwaffe. For example, the abilities of the Heinkel 111 were clearly mistaken when its bomb-load was estimated to be 4400 lbs – its actual capacity was just half this when fully fuelled.<sup>59</sup> Nor did sufficient clues exist to the Luftwaffe's doctrinal basis as a tactical air-arm. AI incorrectly concluded that only a small percentage of its aircrews had been trained for close-support operations.<sup>60</sup> After the dreaded German 'knockout' blow against London failed to materialize in 1939, and after witnessing the evidence of early Blitzkrieg campaigns, these mistakes were eventually ironed out. The summer of 1940 is cited by the official history of *British Intelligence in the Second World War* as the point at which the system began to function far more efficiently.<sup>61</sup> The timing could not have been more fortunate.

The fear that Hitler may strike the British Isles was evident throughout 1940. The case was often overstated, with AI talking in February of 'the



overthrow of the British Empire, with the avoidance of a direct attack on France'.<sup>62</sup> Events on the continent soon disproved this misreading and it was not until June that Britain became the next target. Far less clear was the state of German readiness to launch this attack. There was no knowledge that September was Hitler's planned invasion date, although the need for air supremacy to cross the Channel was generally recognized. On 11 July, AI offered the following conjecture: 'If it is the intention to throw the whole weight of the German Air Force into the offensive, it may be withheld until the end of July'.<sup>63</sup> More concrete indications soon began to seep through. Photographic reconnaissance observed extensions to airfields in northern France, and low-grade Sigint monitored the arrival of bomber squadrons there.<sup>64</sup> The German inactivity of June came as a welcome surprise to the British, who had feared direct attack far more immediately after the French campaign. By early July, escalating raids on coastal targets confirmed the progression of events beyond all doubt.

### *Fighting the Battle*

Once the Battle began, intelligence would clearly play a supporting role to the efforts of Fighter Command. The official historians describe this succinctly:

That Germany lost the battle and was forced to abandon the attempt to land in England – this outcome, contrasting with her successes so far, owed much to the difficulty of the German undertaking and perhaps still more to the tenacity of the British resistance. It owed less to the fact that British intelligence was at last beginning to improve.<sup>65</sup>

Intelligence would nevertheless contribute in two vital areas. Firstly, it would provide information on the Luftwaffe order of battle. Secondly, it would provide forewarning of imminent Luftwaffe operations.<sup>66</sup> Examining each in turn will provide a good sense of the overall role played by intelligence in the British defence.

The poor radio discipline exhibited by Luftwaffe aircrews allowed the British to intercept a vast amount of low-level chatter. This divulged the call signs used to identify different German units, the numbers of aircraft being referred to, and perhaps even the bases they operated from. All this information was carefully cross-referenced with existing knowledge about Luftwaffe units, particularly from aircraft tail markings. This meticulous process allowed AI to identify virtually every enemy air unit stationed to strike Britain. However, overestimation of enemy numbers was still proving to be a stumbling block. In July, Luftwaffe strength was estimated to be

5,000 frontline aircraft, half of which were bombers, with a further 7,000 reserves.<sup>67</sup> AI admitted that in addition to intercepted call signs, the other method it employed had been 'estimations of output and wastage, based on an analogy with British experiences'.<sup>68</sup> If the Sigint could not be faulted, then perhaps it was the latter that created confusion and misinterpretation. Indeed, for Richard Overy the inaccuracies can be explained by a failure to understand such details as the Luftwaffe reserve-operational balance, and by overestimating the standard size of its squadrons.<sup>69</sup> The figures were challenged by members of the Air Staff for being unrealistically large, and were recalculated to a more accurate 2,500 aircraft with the aid of extra intelligence garnered from Enigma (which will be discussed below). The tendency for AI to overestimate the German threat had already left its mark:

[Fear of the knockout blow] had occupied Dowding's mind since his earliest days at Fighter Command, and affected his prepared strategy and response. A crucial revision of [AI] estimates was not made until a few days before air the battle began. By the time the information reached Dowding it was late for him to revise strategy.<sup>70</sup>

Throughout much of the Battle, Fighter Command believed it was facing a far stronger enemy than was actually the case. Even as late as August it was believed that bombers were being held in reserve, when the Luftwaffe was in fact already fully committed.<sup>71</sup> Paradoxically, these overestimations may well have worked in favour of the RAF. The dilemma facing Dowding was how best to repel the overwhelming force he expected to face, whilst simultaneously ensuring Fighter Command survived as a coherent force. His answer was to allow the south-east, under the protection of 11 Group, to absorb much of the strain. The other Groups would bolster its defences where appropriate, but would also act as safe houses for squadrons in need of recuperation. The result was a rotational strategy that never committed more force than necessary, and was devoid of any measure of complacency.<sup>72</sup> This approach is commonly attributed to Dowding's typically parsimonious managerial style, and is often criticized for heaping too great a burden on 11 Group. One must also appreciate the influence that exaggerated figures of Luftwaffe strength would have had on his strategic calculations.

The second important intelligence contribution to Fighter Command was forewarning its squadrons of incoming raids. Radar was the principal asset for detection, but the information it generated could often be vague. Height readings were only approximate, and the time lag between interpreting radar and scrambling fighter squadrons averaged at four minutes – it took the raiders just six minutes to cross the Channel. It was only through the use of Y interceptions that a much broader situational awareness could be established.

Low-grade orders transmitted to Luftwaffe crews, and the poor radio discipline of crews themselves, often betrayed the destination, size and timing of raids. By late summer these intercepts were being fed straight to the fighter stations of 11 Group within one minute of being heard.<sup>73</sup> This information proved fundamental to the management of Fighter Command. It meant that enemy raids could be met head-on with the appropriate level of force. It also meant that the skies could be monitored without having to mount round-the-clock fighter patrols. Without this intelligence, a far greater number of planes would have been required to mount a credible defence.

Low-grade Sigint could only pick up tactical transmissions, so what of Enigma and the interception of high-grade communications? Bletchley Park broke the Luftwaffe Enigma keys in January 1940. Its contribution to the Battle has become a moot point in post-war British historiography due in no small part to overblown claims of senior AI officer F.W. Winterbotham. In *The Ultra Secret* he proclaimed that: 'It was our wits and brains which produced the Ultra intelligence that provided the key to Air Marshall Dowding's strategy'. He goes on to describe how Ultra became an invaluable long-term planning aid, notifying of Eagle Day well in advance, and ultimately warning Dowding of Goering's entire strategy.<sup>74</sup> Although some of this can be attributed to Winterbotham's undeniable enthusiasm for a project he personally contributed to, and the fact he was writing purely from memory over 30 years later, this view is directly contended by the official historians: 'Enigma was of no help in forecasting shifts that occurred during the Battle in the GAF's methods and objectives', they declare, explaining that strategic discussions between commanders in Berlin and formations stationed in France tended to go through landlines rather than be transmitted.<sup>75</sup> Ultimately, it was the work of Martin Gilbert that showed it was not until 16 October 1940 that Dowding was even added to the list of those allowed access to Ultra.<sup>76</sup> Based upon this debate, Dowding's success appears to owe less to Enigma than to his own instinctive ability to infer enemy intentions.

Of course, one cannot be conclusive about something as secretive as Ultra. Ralph Bennett notes that Dowding may well have been indoctrinated verbally into its ring of recipients, and that its input would certainly never have been documented by name.<sup>77</sup> Ronald Lewin goes even further, arguing that Dowding could not admit to using Ultra, even when defending his strategy against bitter critics within the Air Ministry. Dowding had controversially argued down 12 Group's suggestion for massing fighter formations into 'Big-Wings'. He maintained that small and diffused formations were better suited for the long haul, a stance that Lewin attributes to Ultra information on the future pattern of Luftwaffe raids. After the Battle, Dowding could not possibly name the source of the information that justified his decision. The weak case he presented allowed his rivals to engineer his removal from command.<sup>78</sup>

The divisive perspectives surrounding the relationship between Dowding's strategic decisions and Ultra information make it very difficult to draw any conclusions. However, the contributions made by Enigma to RAF tactical conduct are better documented. For example, interceptions described as 'apparently sure evidence' and 'heaven sent' were used to revise the order of battle figures in early summer, resulting in a far more accurate computation.<sup>79</sup> Useful snippets of operational information surfaced regularly, but the civilian workers at Bletchley Park often failed to ascertain the military significance of these interceptions because they were trained to extract longer-term data. This was something of an organizational failure in that the use of high-grade equipment had not been anticipated to yield tactical information. The official historians once again conclude that Enigma contributions were minimal, owing to the vague and incomplete nature of these snippets, and the organizational failures in exploiting their true worth.<sup>80</sup>

A final area requiring sound intelligence work was that of recording losses. The same issue of exaggerated pilot claims faced by D5 also hampered the British. This is clearly evident when surveying the documents of the day. An AI report on losses estimated that 833 bombers of all types had been damaged or destroyed between 8 and 27 August.<sup>81</sup> Cross-referencing this with the records of the Luftwaffe Quarter-Master General's Department, destroyed/damaged bombers and dive-bombers are put at just 460 for the whole of August.<sup>82</sup> From the same sources, British fighter claims rest at a massive 1,072 damaged/destroyed, compared to just 479 in German records. Although the time periods covered by the two sources do vary, even this roughest of comparisons conveys the extent of British over-counting. Later in the same AI report, it is concluded that 'providing our Fighter Defence remains intact and German Fighter losses continue at the present rate, the escorted daylight raids . . . could not be carried on for more than six weeks'. Although its kill estimations were way off the mark, the conclusion it had drawn proved to be quite accurate. In fact, it took just four weeks after the report was published for Luftwaffe daylight losses to become unsustainable, resulting in the October switch to night raids. Both AI and D5 had over-counted enemy losses, but why had this proved far less damaging to British fortunes than to the Luftwaffe? The answer lies in the contrasting intelligence needs of the defensive force. Compared to his opponent, Dowding's task was far more straightforward: avoid defeat until bad weather made an invasion impossible in late 1940. Figures or no figures, this task was entirely self-evident and unchanging throughout the Battle.

## CONCLUSIONS

Measuring the influence intelligence had on the conduct and outcome of the Battle of Britain is challenging because influence is not quantifiable. It is

perhaps timely to return to themes introduced at the start of this article. For the RAF: 'good intelligence will act as a *force multiplier* by facilitating a more focused and economical use of force'.<sup>83</sup> The operational contribution made by intelligence was highly significant simply because enemy attacks could only be repelled if they had been anticipated. Fighter Command benefited immeasurably from the web of information surrounding it. The combination of detection techniques, ranging from advanced radar to aircraft spotters sitting on England's south coast, managed to generate a good short-term awareness of Luftwaffe activities. The same cannot be said in the realm of strategy. The decisions made by Dowding were less a result of prescient forewarning and more a product of his own calculations. This is perhaps attributable to the relative infancy of Enigma, and its inconsequential role in the Battle contrasts heavily with its more decisive contributions later in the war. To sum up, the entire basis of the Dowding strategy necessitated staying one step ahead of an enemy that was free to pick the time and place of attack. Although the Battle was ultimately won by his managerial skills, and the dog-fighting abilities of his pilots, intelligence proved to be a valuable facilitator for their talents. It allowed the RAF to be in the right place, at the right time, and in the right numbers.

For the Luftwaffe: 'when all other things are equal, poor intelligence will act as a *force divider* by wasting and eroding strength'.<sup>84</sup> At the heart of the Luftwaffe failure was a breakdown in the ends-means relationship central to any military operation. Its leaders could not correlate the overall outcome they desired with the forces they had available. Intelligence failure was just one reason for this. Others included the unexpected speed at which Germany reached the Channel, the uncharted concept of strategic bombing, performance limitations of its aircraft, and the failures of a highly personalized leadership structure. The failure of intelligence was particularly crucial because a strategic bombing campaign cannot function without data, and intelligence ought to have taken centre stage in its planning and execution. Instead, the very nature of the Third Reich prevented this need from ever being realized, let alone fulfilled. The faulty intelligence that was supplied proved highly detrimental and D5's massive overestimations evoke comparisons with the consequences of the American 'body-count' method used to monitor Viet Cong casualties 25 years later.<sup>85</sup> In both cases, erroneous kill estimations fostered a false sense of progress among the top brass, encouraging complacency and ultimately resulting in misguided strategic decisions. For the Germans, the bankruptcy of their actions became apparent in September 1940 when Fighter Command defended London with the same numbers and vigour as the weeks before. Throughout the Battle, Goering lacked a clear conception of how to achieve air superiority and placed his faith in simple weight of numbers to pummel the British. His air force lacked the physical and doctrinal basis to succeed, and poor intelligence had the

effect of hopelessly spreading the destruction they did cause between several different targets. This was never enough to deal Britain the killing blow.

Of the intelligence-gathering institutions involved in the Battle, one would have to conclude that their respective structures exerted an important influence upon their subsequent conduct. The ill-fated 5th Department under Schmid exemplified the torrid time intelligence can have in a totalitarian environment. The possession of information equates to power, and its collection could not have been centralized outside of the Nazi leadership without weakening its own grip on the system. Moreover, the pursuit of truth became subsidiary to enacting the will of Hitler and Goering. D5 was obviously a product of this constricting environment and its output clearly suffered. Intelligence was institutionalized far more successfully in the British decision-making process. The relationship between different intelligence-gathering bodies had been regulated, and the dissemination process made efficient enough to ensure that information was received to assist the decision-makers in Fighter Command. The fortunes of intelligence in the totalitarian environment of Nazi Germany contrasted heavily with the democratic context of Britain, and this sheds some light on the quality of their respective output.

Ultimately, German and British approaches to intelligence have far deeper roots. These can be traced to the widely contrasting geostrategic positions of each country. For the Germans, the demands of continental warfare through direct engagements meant that traditional military qualities eclipsed the gathering of intelligence. Indeed, the Prussian officer elite perceived intelligence as a dishonest trade and one that potentially threatened their jobs.<sup>86</sup> For the British, separation from the continent meant that intelligence was a vital tool in their manipulation of European affairs. The lack of adjacent foes resulted in a strategically reactive culture, and this in turn necessitated greater use of intelligence.<sup>87</sup> The Battle of Britain exemplified the contrasting position intelligence enjoyed within each country. The Luftwaffe, bereft of the Wehrmacht for the first time in the war, found itself unable to steamroller its way to success. The importance of good intelligence to a strategic bombing campaign simply did not register with Goering. For the RAF, its reactive stance demanded a constant flow of good information in order to operate, and its intelligence apparatus proved competent in this field.

#### NOTES

- 1 AIR 20/7701, 'The Course of the Air War against England', *Translations from Captured Enemy Documents* (London: Public Records Office) dated 7 July 1944.
- 2 In particular: Sebastian Cox, 'A Comparative Analysis of RAF and Luftwaffe Intelligence in the Battle of Britain, 1940' and Horst Boog, 'German Air Intelligence in the Second World War', both in *Intelligence and National Security* 5 (1990).

- 3 Michael Handel, 'Intelligence and Military Operations', *Intelligence and National Security* 5 (1990) p.32.
- 4 *The Halder War Diary 1939–1942*, edited by Charles Burdick and Hans-Adolf Jacobsen (London: Greenhill 1988), p.227.
- 5 AIR 20/7701 (note 1); Derek Wood and Derek Dempster, *The Narrow Margin, The Battle of Britain and the Rise of Air Power 1930–40* (London: Hutchinson 1961) p.221.
- 6 AIR 22/72, 'Weekly Intelligence Summary' (London: Public Records Office) dated 18 July 1940, pp.3–4
- 7 Karl Klee, 'The Battle of Britain' in Hans-Adolf Jacobsen and Jurgen Rohwer (eds.) *Decisive Battles of WWII: The German View*, translated by Edward Fitzgerald (London: Andre Deutsch 1965) pp.73–96; Horst Boog, 'Higher Command and Leadership in the Luftwaffe, 1939–1945' in Mark K. Wells (ed.) *Air Power: Promise and Reality* (Chicago: Imprint 2000) p.127; Cajus Bekker, *The Luftwaffe War Diaries*, translated by Frank Ziegler (London: Macdonald & Co. 1966) Bekker (1966), p.148.
- 8 'Luftkriegführung' Document 200, March 1940, cited in Richard Overy, *The Air War 1939–1945* (London: Europa 1980) p.10.
- 9 Wood and Dempster (note 4) pp.44–45.
- 10 AIR 20/7707, 'The Battle of Britain' by A. Galland, *Translations from Captured Enemy Documents* (London: Public Records Office) p.4.
- 11 AIR 22/72, 'Weekly Intelligence Summary' (London: Public Records Office) dated 4 September 1940, p.1.
- 12 Horst Boog, 'German Air Intelligence in the Second World War', *Intelligence and National Security* 5 (1990) p.406.
- 13 David Kahn, *Hitler's Spies, German Military Intelligence in WWII* (London: Hodder & Stoughton 1978) pp.528–529.
- 14 Michael Geyer, 'National Socialist Germany: The Politics of Information' in Ernest R. May (ed.) *Knowing One's Enemies* (Princeton, NJ: Princeton 1984) p.338.
- 15 Boog, 'German Air Intelligence in the Second World War' (note 11) pp.350–354.
- 16 Boog, 'Higher Command and Leadership in the Luftwaffe' (note 6) pp.111–130.
- 17 Ibid. p.350; Kahn, *Hitler's Spies* (note 12) p.382.
- 18 Geyer (note 13) p.343; Boog, 'Higher Command and Leadership in the Luftwaffe' (note 6) pp.113, 135.
- 19 Kahn, *Hitler's Spies* (note 12) pp.382–383.
- 20 Wood and Dempster (note 4) p.103.
- 21 Boog, 'German Air Intelligence in the Second World War' (note 11) p.355.
- 22 *Studie Blue* cited in Boog, 'German Air Intelligence in the Second World War' (note 11) p.355, cross-referenced with figures from Richard Overy, *Why the Allies Won* (London: Jonathan Cape 1995) p.331.
- 23 Ibid. p.356 (both quotations).
- 24 Halder Diaries (note 3) p.24 (italics original).
- 25 Boog, 'German Air Intelligence in the Second World War' (note 11) pp.357–359.
- 26 AIR 20/7701, 'Proposal for the Conduct of Air Warfare...', *Translations from Captured Enemy Documents* (London: Public Records Office) p.2.
- 27 Ibid. pp.1–2.
- 28 Wood and Dempster (note 4) p.105.
- 29 Ibid.
- 30 Sebastian Cox, 'A Comparative Analysis of RAF and Luftwaffe Intelligence in the Battle of Britain, 1940', *Intelligence and National Security* 5 (1990) p.435.
- 31 Actual production figures from Richard Overy, *The Battle* (London: Penguin 2000) p.159.
- 32 Translation of this report appears in Wood and Dempster (note 4).
- 33 Overy, *The Battle* (note 30) p.75.
- 34 Cited in Wood and Dempster (note 4) pp.220–221.
- 35 AIR 20/7707, 'The Battle of Britain' (note 9) p.18.
- 36 Overy, *The Battle* (note 30) pp.75–76.
- 37 Cited in Wood and Dempster (note 4) p.113.

- 38 AIR 20/7701, 'Directives of Reichsmarshal Goering', *Translations from Captured Enemy Documents* (London: Public Records Office) p.2.
- 39 AIR 20/7707, 'The Battle of Britain' (note 9) p.17.
- 40 ADM 199/110, 'Dowding Dispatch' (London: Public Records Office) p.117.
- 41 Air 20/7708, *Translations from Captured Enemy Documents* (London: Public Records Office), also cited in John Ray, *The Battle of Britain, New Perspectives* (London: Brockhampton 1999) p.71.
- 42 Air 16/365, 'F.C. Operational Strength of Squadrons and Order of Battle', *Fighter Command Operational Strength of Squadrons and Order of Battle* (London: Public Records Office).
- 43 Overy, *The Battle* (note 30) pp.86–88.
- 44 *Ibid.* p.95.
- 45 Klaus Maier, 'The Battle of Britain' in *Germany and the Second World War Vol.II* (Oxford: Clarendon Press 1991) pp.397–398.
- 46 Cited in Boog, 'German Air Intelligence in the Second World War' (note 11) p.369.
- 47 Maeir (note 44) p.404.
- 48 Ray (note 40) pp.33–34.
- 49 Stanley Baldwin, House of Commons Debates, 10 November 1932.
- 50 Wood and Dempster (note 4) chapters 6–10.
- 51 *Ibid.* p.77.
- 52 Kahn, *Hitler's Spies* (note 12) p.5.
- 53 Ray (note 40) p.42.
- 54 F.H. Hinsley (ed.), *British Intelligence in the Second World War* (London: HM Stationary Office 1979) pp.3–4, 10.
- 55 All details on AI, see Cox, 'A Comparative Analysis' (note 29) pp.425–426; Sebastian Cox, 'The Sources and Organisation of RAF Intelligence and its Influence on Operations', in Horst Boog (ed.) *The Conduct of the Air War in WWII* (New York/Oxford: Berg 1992) pp.553–555.
- 56 Hinsley (note 52) pp.14, 20.
- 57 *Ibid.* p.15.
- 58 AIR 9/90, AI3, *German Air Strength: Appreciation of the Situation in the Event of War with Germany* (London: Public Records Office); also cited in Wesley K. Wark, 'British Military and Economic Intelligence: Assessments of Nazi Germany Before WWII' in Christopher Andrew and David Dilks (eds.) *The Missing Dimension* (London: Macmillan 1984) pp.81–83.
- 59 *Ibid.*
- 60 Wesley K. Wark, 'British Intelligence on the German Air Force', *Historical Journal* (1982) pp.641–643; Hinsley (note 52) p.110.
- 61 Hinsley (note 52) p.64.
- 62 AIR 40/2321, Minute 22: 'Invasion and Attack of the UK', *Summary of Minutes and Papers Written by Heads of German Section of Directorate of Intelligence (A.I.3) and Deputy Director of Department (D.D.I.3)* (London: Public Records Office) dated February 1940.
- 63 AIR 20/70, 'Weekly Intelligence Summary' (London: Public Records Office) dated 11 July 1940.
- 64 Hinsley (note 52) pp.173–174.
- 65 *Ibid.* p.164.
- 66 Cox, 'A Comparative Analysis' (note 29) p.429.
- 67 *Ibid.* pp.430–431; Hinsley (note 52) p.177.
- 68 AIR 8/463, 'British and German Air Forces: Comparative Strengths' (London: Public Records Office).
- 69 Overy, *The Battle* (note 30) p.127.
- 70 Ray (note 40) p.58.
- 71 Air 22/70, 'Weekly Intelligence Summary' (London: Public Records Office) dated 22 August 1940 and 29 August 1940.
- 72 Overy, *The Battle* (note 30) p.128; Cox, 'A Comparative Analysis' (note 29), p.431.
- 73 Ralph Bennett, *Behind the Battle* (London: Sinclair Stevens 1994) p.55.



- 74 F.W. Winterbotham, *The Ultra Secret* (London: Orion 1974) pp.25, 46–50.
- 75 Hinsley (note 52) p.178.
- 76 Gilbert cited in Ray (note 40) p.59, and Cox, 'A Comparative Analysis' (note 29) p.432.
- 77 Bennett (note 71) pp.56–58.
- 78 Ronald Lewin, *Ultra Goes to War, The Secret Story* (London: Hutchinson 1978) pp.87–90.
- 79 AIR 40/2321, Minute 77, *Summary of Minutes and Papers Written by Heads of German Section of Directorate of Intelligence (A.I.3) and Deputy Director of Department (D.D.I.3)* (London: Public Records Office); also cited in Cox, 'A Comparative Analysis' (note 29), p.430.
- 80 Hinsley (note 52) p.177.
- 81 AIR 40/2321, 'The Scale of Attack Against England, 8–27 August', *Summary of Minutes and Papers Written by Heads of German Section of Directorate of Intelligence (A.I.3) and Deputy Director of Department (D.D.I.3)* (London: Public Records Office), dated 2 September 1940.
- 82 AIR 20/7703, 'German Air Losses, Quarter-Master General's Dept. of the German Air Ministry', *Translations from Captured Enemy Documents* (London: Public Records Office).
- 83 Michael Handel, 'Intelligence and Military Operations', *Intelligence and National Security* 5 (1990) p.32 (emphasis added).
- 84 Ibid.
- 85 George C. Herring, *America's Longest War* (John Wiley & Sons 1979) pp.154–156.
- 86 Boog, 'Higher Command and Leadership in the Luftwaffe' (note 6) pp.130–131.
- 87 Kahn (1978), p.531.

## BIBLIOGRAPHY

### *Books and Articles*

- Addison, Paul and Crang, Jeremy, eds. (2000), *The Burning Blue, A New History of the Battle of Britain* (London: Pimlico).
- Boog, Horst (1991), 'The Luftwaffe and the Battle of Britain', in Henry Probert and Sebastian Cox (eds.) *The Battle Rethought: A Symposium on the Battle of Britain* (Shrewsbury: AirLife Publishing).
- Cooper, Matthew (1981), *The German Air Force 1933–1945* (London: Jane's).
- Herman, Michael (1996), *Intelligence Power in Peace and War* (New York: Cambridge University Press).
- Irving, David (1974), *The Rise and Fall of the Luftwaffe* (Boston: Little Brown and Company).
- Jones, Kevin (2000), 'From the Horse's Mouth: Luftwaffe POW's as Sources for Air Ministry Intelligence During the Battle of Britain', *Intelligence and National Security*, No.15, pp.60–79
- Mason, F. (1994), *Airpower, a Centennial Appraisal* (London: Brassey's).
- May, Ernest R., ed. (1984), his introduction to *Knowing One's Enemies* (Princeton, NJ: Princeton).
- Orange, Vincent (1991), 'The British Commanders', in Henry Probert and Sebastian Cox (eds.) *The Battle Rethought: A Symposium on the Battle of Britain* (Shrewsbury: AirLife Publishing).
- O'Toole, George J.A. (1990), 'Kahn's Law: A Universal Principle of Intelligence', *International Journal of Intelligence and Counter-Intelligence*, No.4, pp.36–42.
- Overy, Richard (1980), 'Hitler and Air Strategy', *Journal of Contemporary History*, pp.406–417.
- Price, Alfred (1990), *The Battle of Britain* (London: Arms & Armour Press).
- Reynolds, David (1990), '1940: The Fulcrum of the Twentieth Century', *International Affairs*, No.66/6, pp.325–350.

- Thomas, Edward (1991), 'The Intelligence Aspect' in Henry Probert and Sebastian Cox (eds.) *The Battle Rethought: A Symposium on the Battle of Britain* (Shrewsbury: Airline Publishing).
- Williamson, Murray (1986), *Strategy for Defeat, The Luftwaffe 1933-1945* (New York: Brassey's).
- Wood, Derek (1991), 'The Dowding System', in Henry Probert and Sebastian Cox (eds.) *The Battle Rethought: A Symposium on the Battle of Britain* (Shrewsbury: Airline Publishing).

### *Primary Sources*

*All AIR, ADM and PREM references denote documents stored in the Public Records Office in London.*

AIR 22/477 through to 22/480, *Air Ministry W/T Intelligence Service daily summaries.*

AIR 40/2444, *Battle of Britain: German account and other papers.* AIR 41/15-16, *Monograph: Battle of Britain.*

PREM 4, Prime Minister's Office: Confidential Papers.