Bombers, 'Butchers,' and Britain's Bête Noire: Reappraising RAF Bomber Command's Role in World War II

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No aspect of World War II has been more hotly debated, or so misunderstood, as RAF Bomber Command's offensive against the Third Reich. Until the 1990s, the nearly universal view was that the campaign had been a costly failure, consuming resources that would have been better used elsewhere. This still-prevalent view maintains that Bomber Command's raids had no significant impact on Germany's war effort. Critics condemn Bomber Command and its commander, Air Chief Marshal Sir Arthur Harris, for unleashing a brutal and immoral campaign designed to kill civilians, undermine morale, and force the Nazi regime to sue for peace. In this dominant narrative, brave airmen were sent to do a job that was operationally ineffective and morally reprehensible. Consequently, most people now view Bomber Command's offensive as a "cause lost" rather than a "cause won." This paper attempts to takes an objective approach using recent scholarly and archival work, particularly in the areas of German economic activity and Allied intelligence sources, to argue that Bomber Command in fact caused crippling damage to the German war economy and larger war effort.

Introduction

No aspect of the Second World War has been more hotly debated, or so badly misunderstood, as RAF Bomber Command's heavy-bomber offensive against the Third Reich. Until the early 1990s, the nearly universal view was that the campaign had been a costly failure, consuming huge quantities of resources that would have been better used elsewhere. This view, still prevalent in many quarters today, maintains that Bomber Command's raids had no significant impact on the German war effort. Critics have condemned Bomber Command and its commander, Air Chief Marshal Sir Arthur Harris, for engaging in a brutal and utterly immoral campaign designed to kill civilians, undermine morale, and force the Nazi regime to sue for peace. In this dominant narrative, brave airmen were sent to do a job that, while highlighting their courage, was operationally ineffective and morally reprehensible. In this sense, most people now view Bomber Command's offensive as a "cause lost" rather than a "cause won." A very recent work, Randall Hansen's *Fire and Fury* (2009), demonstrates that this thesis is alive and well.

This presentation attempts to takes an objective approach using recent scholarly and archival work, particularly in the areas of German economic activity and Allied intelligence sources, to argue that Bomber Command in fact caused crippling damage to the German war economy and the Reich's larger war effort. While this is not a discussion about moral issues, but rather about strategic and operational effects and effectiveness, I will raise the moral issue to demonstrate the extent to which it has detracted from a careful look at what RAF Bomber Command actually achieved at the strategic and operational levels. As we will see, the moral argument not only overshadowed any serious discussion of military effectiveness, but in fact strangled it in its infancy. The moral dimension also requires some attention because we need to understand how viewing Bomber Command's actions through late twentieth century and early twenty-first century analytical and moral lenses has distorted our collective understanding of the ways in which people fighting for their national survival, and in the latter stages of the war just wanting to end it as quickly as possible at the lowest cost in blood and treasure, arrived at the decision to bomb the Third Reich's cities, and to keep bombing them. Only by taking account of all the contemporary factors and a large collection of new primary-source material can we begin to understand fully that Bomber Command's "cause lost" was in fact, to a much greater degree than hitherto appreciated, a "cause won".

Moral and Operational Arguments: Obscuring the Reality of Military Effectiveness

While the vast majority of both the British and American people supported RAF Bomber Command's efforts during the course of the war, an increasing moral concern began setting in after Dresden met its fiery demise on 13 February 1945. Within weeks after the raids that destroyed the city, Winston Churchill himself told Air Chief Marshal Arthur "Bomber" Harris, Commanding-in-Chief, RAF Bomber Command, that the time had arrived to begin using a greater degree of discernment in attacking German cities, and that heavy bombers must turn

towards direct-support missions to speed the advance of Allied soldiers into the Reich.[1] Churchill further forbade anything but a modest bombing survey, rather than the detailed assessment recommended by the Air Ministry's leadership and its subordinate British Bombing Survey Unit. The cursory study that followed, which is miniscule when compared to the Army Air Forces' *United States Strategic Bombing Survey*, was for the most part a statistical analysis with far too little discussion of the effects and effectiveness of Bomber Command missions against the Reich. When every major British command with the notable exception of Harris' received a campaign ribbon, it was clear that the politicians, at least, had turned against Bomber Command's commander, his methods, and the command itself.

Consequently, with the notable exception of Harris' own memoir, *Bomber Offensive*, which most readers already viewed as "tainted" given its author and his unapologetic stance on the importance and value of city bombing, almost nothing laudatory or even marginally objective appeared in the immediate postwar years about Bomber Command's role in the war. A few books such as J. M. Spaight's *Bombing Vindicated*, which appeared in 1955, fought a losing rearguard action with far too few useful sources, but they could not overcome the combination of growing disdain for, and disinterest in, Bomber Command's wartime efforts. In fact, almost nothing at all of real note went to press on this subject after 1955 with the key exception of the Charles Webster's and Noble Frankland's official history, and even that did not appear until the early 1960s. Although the official historians made the case that heavy bombers had done vital work against oil, transportation, and other targets, even they appeared reticent to say Bomber command's efforts had any kind of major role in victory. Finally, even the BBSU's brief survey went unpublished until the 1990s. Although several books published long after the war did take a collective first step towards recognizing Bomber Command's important strategic and operational contributions to victory—and these include John Terraine's *The Right of the Line*, Denis Richards' *RAF Bomber Command in the Second World War: The Hardest Victory*, and A. C. Goulding's *Uncommon Valour*, among others—many others have held doggedly to the first paradigm that emerged after World War II—namely, that Bomber Command aircrew performance, while courageous, had not exerted any significant effect on the course of the war. Max Hastings' *Bomber Command* and, much more recently, Randall Hansen's *Fire and Fury*, are in this genre. Hansen goes so far as to argue that the USAAF could have performed all of Bomber Command's tasks more effectively, which is patently false, especially when we look at the unique operational capabilities British heavies brought to the transportation and oil offensives.[2]

In contrast to this very tardy and partial analysis of Bomber Command effects and effectiveness, a voluminous literature regarding its moral failings sprang up relatively quickly and has dominated the scholarly conversation ever since. In fact, it effectively overshadowed any serious look at what Bomber Command accomplished, and it has continued to do so right up to the present. F. J. P. Veale led this off with *Towards Barbarism*, published in 1949, followed by R. Grenfell's *Unconditional Hatred?* in 1954. Early German works, often produced by a team of authors who wrote about a specific city's experiences during the bombing, acted as catalysts that propelled this issue into the limelight. More recently, A.C Grayling's *Among the*

Dead Cities illustrates both the importance of grappling with the moral issue and the dangers of doing so to the exclusion of facts regarding British bombing effectiveness. Full of serious historical inaccuracies regarding the nature and effectiveness of British bombing, and starting from the position that it was both immoral and ineffective (in fact, there is a clear case of ipso facto reasoning here—in other words, that one in effect followed from the other—as there is in nearly all such books), Grayling's work represents the norm in this genre.[3] So, too, does Nicholson Baker's *Human Smoke: The Beginnings of World War II, The End of Civilization*. The effects of this focus on moral issues resulted in a long delay from war's end to a serious and broad scholarly engagement with RAF Bomber Command's effectiveness, and in the persistent idea that city bombing was a moral crime not worth the human and material costs even were one to assume it was highly effective. To address the issue of strategic and operational effectiveness, we must therefore decouple the moral and military dimensions, at least for the purposes of establishing Bomber Command's substantive contributions to Allied victory.

Bomber Command City Raids, 1943: Reassessing Their Impacts

Despite Bomber Command's inability to defeat Germany on its own (and by 1944 only Arthur Harris still believed it either could or should), its efforts did pay major dividends, especially when viewed in conjunction with USAAF raids. Intelligence officers were able to point to several specifics, and they had at least a strong gut feeling about others. However, the full effects of Bomber Command's efforts have become clear only in the light of very recent scholarship, conducted primarily in the German archives by Richard Overy and Adam Tooze.[4] Nonetheless, others were driving at answers even earlier.

In a 1987 interview, Lt Col Lewis Powell, Spaatz's Ultra representative, said, "Whether one approves of area bombing which the RAF did or not, it was effective in terms of disrupting communications, and commitment of German personnel."[5] Powell was clearly referring to both the First and Second Battles of the Ruhr in 1943 and 1944-45, and to the transportation and oil offensives in 1944-45.

The first clear sign of bombing effectiveness was the large degree of disruption, dislocation, and dispersal of factories and people it imposed on the Reich. When considering these effects it is important to keep in mind one of the key arguments made at the beginning of my recent work on air intelligence and its relationship to the heavy bomber campaigns: that Allied bombing was the creator of friction in the German war economy *par excellence*. This was certainly true of city attacks. As Richard Overy has noted, "Bombing also had the effect of interrupting in arbitrary and unpredictable ways the web of supplies of materials and parts on which the whole industrial structure depended. The gradual collapse of the supply system forced firms to carry larger stocks again, and left regular gaps in the supply of components or scarce materials."[6] The Battle of the Ruhr marked the first point at which these problems became pronounced. Ultra intercepts, which became more frequent in the summer of 1943, record this growing shortage of components, including spare parts for artillery as well as

Me 109 and FW 190 propellers. The salvaging of crashed fighter aircraft also took priority over all other salvage efforts, indicating how desperate the Germans were for spare parts for these planes.[7]

Thus, while city attacks were clearly not decisive, they did create serious difficulties for the Germans, whether in halting production in factories for varying periods of time or forcing the dispersal of war industries. This process took time and required the services of huge numbers of both skilled and unskilled workers, of which the former were in very short supply as more and more skilled (and older) male workers traded in their overalls and tools for uniforms and rifles and headed to the front. Although this increasing shortage of skilled workers was an ancillary problem, its interaction with the direct and indirect effects of bombing was significant. The adverse effects of dispersion became even more acute once bombers began attacking the German transportation network in late 1944, disrupting the flow of components to central assembly points and causing huge quality-control problems throughout German industry. Horst Boog made this clear when he pointed out that the dispersal of aircraft production resulted in the establishment of around 700 small shops, whereas previously the entire industry resided in 30 large factories. On the human side of this disruption, Boog said, "The number of man hours lost through night alerts and absenteeism are incalculable."[8]

Equally important, recent scholarship has demonstrated conclusively that the German war economy was already tightly stretched by 1943 and that certain vital materials, including steel and sub-components for a huge array of heavy weapons and aircraft, were in very short supply. Add to this a severe coal shortage in 1942, and the conditions for serious injury were present.[9] Three other factors exacerbated this problem, creating a major crisis in German armaments production. The first was Bomber Command's effort against the Ruhr, which housed most of the steel and industrial sub-components factories. These targets suffered severe damage, as did the transportation hubs responsible for moving goods to arms factories and assembly points. So, too, did the natural gas and electrical pipes and conduits throughout the Ruhr, which took a terrible beating at the hands of the new 4,000 lb. "Blockbuster" bombs in combination with incendiaries. The second was the start of intensive USAAF daylight bombing, which caused major damage to several different industries (especially aircraft factories and ball bearing plants), exacerbated the already-serious stoppages and dislocation in the war economy, and forced yet another acceleration of dispersal. The third factor was the high combat tempo throughout 1942-43, which left the *Wehrmacht* in desperate need of replacement heavy weapons, vehicles, and other equipment. By bringing Speer's nascent "Armaments Miracle" to a screeching halt during the second half of 1943, bombing created serious equipment shortages at the front. It also inhibited the Germans from developing new generations of weapons, as they instead struggled to keep current models coming off the production lines. Steel output, the key indicator for heavy-weapons production other than aircraft, suffered a 400,000-ton shortfall as a result of Bomber Command raids.[10]

In his superb book on the German war economy, Adam Tooze concluded that, "Reading

contemporary sources, there can be no doubt that the Battle of the Ruhr marked a turning point in the history of the German war economy…[it] has been grossly underestimated by post-war accounts…Bomber Command had stopped Speer's armaments miracle in its tracks."[11] As he also noted, the real tragedy of the Battle of the Ruhr was Harris' failure to keep attacking key targets in the region, turning his efforts instead to the political-economic-military chimera of Berlin and ushering in a battle that nearly destroyed Bomber Command. Given the German steel and sub-components crises, persistent attacks against the Ruhr would have paid greater dividends.[12] As Hitler himself said, "The Ruhr is the one base for our industry which cannot be evacuated."[13]

Even though Harris ended it early, the "Battle of the Ruhr" was disastrous for Germany. Although aggregate production eventually increased, it did not do so until 1944, and even then large numbers of now-outclassed weapons such as the Bf 109 and Mk IV medium tank continued to roll off assembly lines, often unserviceable as they awaited components missing due to transportation and production problems. Newer weapons, such as the Panther and Tiger tanks, the Ta 152 and the Me 262, appeared in smaller numbers and significantly later than would otherwise have been the case.[14] Albert Speer addressed this issue somberly in a speech to the Reich's Gauleiters on 6 October 1943:

> *We have lived through times in army equipment when our tanks were inferior to those of the Russians…The Luftwaffe in the course of the last two years has quite indubitably suffered from an absolute inferiority, a technical inferiority to the weapons of the enemy. And you can see from this example [production of inferior weapons and their poor effectiveness on the battlefield] what it means to be able to procure the quantity and [yet] to be qualitatively inferior. This is quite unsupportable in our situation.*[15]

In other words, even if the Germans could build enough weapons, they would be of little use of if they were technologically inferior to those of the Allies and the Soviet Union.

As Speer noted, problems with aircraft proved particularly daunting because German pilot training was already far inferior to that of the Allies, and the cream of the German fighter force was about to face annihilation in the skies over the Reich. Finally, even as production peaked in July 1944, the oil campaign was getting into high gear, robbing the German army of mobility. It also created a cataclysmic aviation fuel shortage for the many new but already outdated aircraft—and their hopelessly outclassed young pilots—as they made their way to "the front" (which, in their case, was directly overhead). As an American intelligence officer with access to Ultra noted,

> *[T]he Germans did manage ultimately to restore a very high scale of fighter production. But the setbacks of the summer were so effective as to postpone fighter expansion and cripple their fighter training through the critical period until American fighters themselves won unquestioned air supremacy over every corner of Germany. The very loss of production*

entailed by the dispersal process itself helped to contribute to the single-engine fighter shortage of which the ensuing months were to provide incontrovertible evidence.[16]

When viewed in this light, the opportunity costs to German front-line strength were startlingly high. The production cap imposed in the latter half of 1943 resulted in the production of 35 percent fewer tanks, 31 percent fewer aircraft, and 42 percent fewer trucks than would otherwise have rolled off the assembly lines, at a time when having them really mattered given Germany's still-viable if unenviable operational, fuel, and manpower positions. Without the cap imposed first by Bomber Command raids against the Ruhr, and later supplemented by USAAF daylight raids, 30,000 additional tanks and 55,000 additional aircraft could have rolled off the production lines.[17]

The diversion of productive capacity, weapons, and manpower to defend the Reich against heavy bombers also proved very costly. By November 1942, Ultra intercepts confirmed that German aircraft were already leaving the Eastern Front for France to counter bomber operations against U-boat bases. Although these raids proved ineffective, Luftwaffe assets sent to counter them never returned to Russia—they simply folded into the mushrooming Reich air-defense effort. Ultra also confirmed details of the vital conference in January 1943 during which Adolf Galland presided over planning for the activation of the huge fighter arm that would comprise *Luftflotte Reich* once that command stood up officially in January 1944. These intercepts confirmed the growing flood of requirements for aircraft to return to the Reich to protect its cities. In summer 1942, the Luftwaffe had concentrated 60 percent of its air strength in the East. By July 1943, only 36 percent remained facing the Russians, and an even more pathetic 21 percent of the fighter force. By January 1944, only 17 percent of the fighter force was still in the East. Hundreds of fighters, including a large number of Me 110 twin-engine aircraft and some Ju 88s purpose-built with air-intercept radar for night operations, comprised this exodus, indicating that the Germans were every bit as concerned about Bomber Command attacks as they were about USAAF daylight attacks. Equally serious, in early June 1943 Göring ordered a massive dispersal of all aircraft production and Luftwaffe operational assets. By October 1943, combat units had begun cannibalizing aircraft for spare parts as the sub-components crisis and other effects of Bomber Command's Ruhr Campaign took their toll.[18]

The huge diversion of anti-aircraft artillery (AAA) is well known in general terms, but many key details are not. Production of AAA accounted for 14 percent of total war production in the first quarter of 1940 but 29 percent by the first quarter of 1943—all *before* the USAAF had made any serious contributions to the fight. During this same period, the number of heavy AAA pieces in Greater Germany increased from 1,700 to 4,500—some 55 percent of all *Wehrmacht* AAA assets. When one adds medium and light AAA—also of great use at the front—the number was 15,000, with 11,000 of those in the Reich itself, an incredible 73 percent of all AAA assets. Had the Germans been free to allocate AAA as they saw fit, and without the production limitations brought on by steel shortages, they could have deployed another 13,500 guns to the front. Merely the aluminum used up in the production of AAA fuses would have been enough to

allow for production of an additional 40,000 fighter aircraft, although their utility would have been severely limited due to current and future pilot and fuel shortages. The same cannot be said of heavy AAA pieces—all potent tank-killers—and the one million men who manned them in Germany rather than on the Eastern Front. Hitler and Göring were clearly alarmed by the Ruhr raids and began a huge effort to move both AAA and fighters to the Reich for air-defense purposes. On 31 May 1943, the Führer simply said, "It is necessary to increase the flak and night fighter forces in order to protect German cities."[19]

Although many of the AAA crews were too old or young for combat duty, and they actually downed more aircraft than German fighter pilots, the facts of this huge diversion of material and human resources remain unchanged. In addition, the German requirement to choose between producing AAA pieces and ammunition as opposed to conventional artillery and munitions helped create major gun and ammunition shortages on every front by 1944. Taken together with all the other damage caused by Bomber Command, one cannot help but be struck by the force of Sebastian Cox's simple observation about the massive diversion of German personnel and weapons to air-defense duties: "This rather begs the question as to why, if the effects on the Reich economy were not significant, the Germans felt it necessary to divert military forces badly needed at the front to protecting the Reich?"[20]

Recent scholarship has also reassessed an issue long thought put to rest: morale and nutrition among German workers. While German morale never broke, the relentless bombing clearly reduced it, while the gradually-tightening civilian rations caused higher levels of sickness and absenteeism. Even workers at their posts were less productive as the slow effects of nutritional inadequacies set in. At the Ford plant in Cologne, for instance, 25 percent of the workforce was absent from work each day.[21] Particularly in the Ruhr, where air-raid sirens went off constantly in spring and summer 1943, and indeed throughout much of 1944 and early 1945, simple exhaustion would have been an important factor in gauging productivity. As already noted, there were too few skilled German workers to begin with; and the increasing drafts of older, skilled male workers for the military led to the importation of foreign and servile workers. How well they performed their tasks is difficult to measure with precision, but there can be little doubt that they were less capable or, just as important, less dedicated than the German men they replaced. As Horst Boog has noted:

> *The number of man-hours lost by frequent air alerts is impossible to measure, but since machine tools suffered relatively little from bomb damage, the human factor must be rated very high in accounting for the decrease in fighter—and other—production in later 1943… People continued to do their duty in a fatalistic and apathetic mood, and this did not increase their devotion to the political cause and to productivity.*[22]

The official historians of Bomber Command operations agreed with this analysis, perhaps somewhat unwittingly. They noted that productivity at industries in Solingen suffered heavily and for several months in 1943 because, even though the city was not attacked directly,

many of the workers in its plants resided in Wuppertal and Remscheid, both of which were devastated by Bomber Command raids. This is only one instance of several in which they mention this phenomenon (absenteeism as a result of refugee movements and the death or injury of workers), but Boog makes clear that it was widespread and costly.[23]

Bomber Command aerial mining missions in the Baltic also led to major German shipping losses (and the vital high-grade Swedish iron ore they carried) and delayed sea trials of new U-boats such as the Mark XXI. These new boats could not have turned the tide, but they would have caused much greater shipping losses. Instead of getting 20 or more Type XXIs operational by 1945, the Germans managed only one. Ultra confirmed these delays. Harris pushed hard for these mine-laying missions while Deputy Director of Plans at the Air Staff in 1939. His efforts paid off. By April, 1940, Hampden bombers were deploying magnetic mines—an operation that grew dramatically in scale, sophistication, and effectiveness when Harris took charge at Bomber Command. By VE Day, Bomber Command had deployed 47,000 aerial mines and engaged in other raids that sank 717 merchant vessels and damaged another 665. This effort extended to the Danube River, where Bomber Command 205 Group's efforts virtually shut down Rumanian oil and agricultural deliveries to the Reich in summer 1944. Together with the USAAF, Bomber Command also destroyed 111 U-boats in production and another 54 already delivered to the *Kriegsmarine*. Additionally, 423 merchant vessels were sunk between 1 January 1940 and 30 June 1943, placing the German steel position, already precarious, in a severe predicament. Mining and ship attacks were elements in an aggregation of factors that brought about the "steel famine" of 1943, which put a stop to Speer's armaments expansion until early 1944.[24]

Finally, although wartime damage assessments did not reveal it, British bombing prompted Hitler to support several outrageously irrational, expensive, and ineffective programs, including the V-2, which caused a huge diversion of scarce resources. Michael Neufeld has estimated that, given the relative sizes of the German and American wartime economies, and total expenditures on development of the V-2 and the atomic bomb, the Nazis spent as great a proportion of their wartime budget on the former as the Americans did on the latter. In view of the V-2's abject failure to fulfill its role as the Reich's premier "revenge weapon," we can only characterize the program as a colossal waste of effort. Viewed in this light, British bombing paid yet another significant dividend, even if it went unmentioned by air intelligence experts.[25]

Generalleutnant Josef Schmid, Commander of *I Jagdkorps*, which controlled all *Luftflotte Reich* day and night fighters from the end of 1943 to VE Day, said after the war that Bomber Command had done little of consequence prior to the 1000-plane Cologne raid in May 1942. After that, however, the systematic, increasingly accurate, and steadily heavier nature of the offensive magnified bombing's indirect effects, as Schmid put it, to an unbearable extent. Bomber Command's expert ability to find and bomb targets by fall 1944 made the Second Ruhr Offensive even worse than the first. Based on this increasing accuracy and level of damage, Schmid believed it would only have been a matter of time before Bomber Command city

attacks paralyzed the German war economy by destroying transportation nodes, doing direct damage to industries, and maximizing friction.[26] Like Speer, who said American bombing did more damage than the British, Schmid may have been catering to his interrogators; but his views are nonetheless worth considering in view of the increasing body of evidence pointing to Bomber Command's effects on the Reich's war effort.

Transportation and Oil Offensives: Bomber Command Effectiveness Confirmed Again

It is also important to remember the grand- and military-strategic contexts within which Bomber Command operated. Bomber Command's leadership had orders to carry the war to Germany—and it was the only instrument for doing so until 1944. In fact, there is clear evidence that Bomber Command's city bombing, while clearly not decisive, did create very significant difficulties for German war production. It did so in part because, as both Richard Overy and Adam Tooze have noted, the German war economy was already stretched much more tautly that previous scholars recognized.[27] Bomber Command raids were thus hitting much harder at the Reich's war economy than was previously understood. In this sense, Bomber Command achieved the objective set for it by the CCS. The bravery and sacrifice of the command's aircrews clearly mattered, both in terms of shortening the war and the Grand Alliance's casualty lists.

The British contribution also had strategic effects in the sense that Bomber Command was a key organization in the creation of a mature Allied air intelligence organization, which facilitated increasingly effective heavy-bomber campaigns. These culminated in the transportation offensive to isolate the Normandy battle area from German reinforcements and supplies (in particular fuel), the oil offensive, and the transportation offensive against the Reich itself. These three campaigns proved crucial to the speed with which the Allies won the war in Europe because they undermined German battlefield mobility, all but grounded the Luftwaffe, and collapsed the German war economy—an economy already much-weakened, as we have seen, by earlier Bomber Command attacks.

The oil and transportation offensives could not have succeeded without heavy Bomber Command involvement. With regards to the oil offensive, heavy-bomber crews dropped 509,206 tons of bombs on enemy targets up to May 1944, but only 5,670 (1.1 percent) on oil targets. From 12 May 1944 to 8 May 1945, they dropped 191,256 tons on 87 German oil-producing targets (16 hydrogenation plants, 9 Fischer-Tropsch plants, 40 refineries, and 22 benzol plants). They made a total of 273 raids comprising 61,712 sorties on synthetic oil plants alone between May 1944 and April 1945. It is also significant that Bomber Command crews flew 109 of these raids. Given the much greater bomb tonnage they delivered (remember that the Lancaster carried 14,000 lbs. of bombs and the B-17G only 6,700), the British deserve at least equal credit for the oil offensive's success. Indeed, given the short days and bad weather of fall and winter 1944-45, Bomber Command assets were the only ones with sufficient payloads

(both in terms of total weight carried and huge munitions such as the 4,000 lb. "Blockbuster" with its immense blast damage), and accuracy to destroy large synthetic oil plants in central and eastern Germany.[28]

Given the Allies' determination to destroy Germany's oil industry, and with it the *Wehrmacht's* ability to fight a war of maneuver, they put more than enough bombs on target. The results were catastrophic for aviation fuel production, which averaged 170,000 tons per month until April 1944. In June it was 52,000 tons, in December 26,000, and in March 1945 zero. The figures were nearly as grim for gasoline production: 121,000 tons up to April 1944, 75,000 in June, 50,000 in December, and 39,000 in March 1945. As a result of the oil offensive and major combat operations, total stocks of finished POL products dropped from 1,372,000 tons in April 1944 to 436,000 tons by January 1945. Gasoline comprised only 120,000 tons of this and there was almost no aviation fuel.[29] The importance of these drastically reduced production figures becomes clearer when we consider Speer's comment that "The possible German production in 1944, excluding Romania, would have been adequate to cover requirements. It would have guaranteed the mobility of the Army and Air Force."[30] Combined with the 245,400 tons of lost production from Romania, total losses from 1 April 1944 to 31 December 1944 were 2,489,000 tons, a quantity which, said Speer, *would have met all German requirements for 1944*.

As for the effectiveness of transportation attacks against the Reich, any criticisms must take into account an issue of fundamental importance: until February 1945, and again from late March to VE Day, they were often focused on assisting the Allied ground advance, and appropriately so. The entire heavy-bomber effort relating to the Normandy campaign was designed to isolate the battle area to the maximum possible extent while creating pervasive fuel and ammunition shortages. In coordination with "tactical" air assets, it did so remarkably well. By the end of June 1944, German train movements in France were already down 90 percent, German army units had demotorized in a losing effort to resupply by truck, and ammunition shortages worsened by the week. Bomber Command heavies played a vital role in this process by bombing over 70 percent of the most vital French and Belgian marshalling yards with devastating accuracy.[31]

With respect to the transportation campaign against the Reich, CSTC minutes from an 8 November 1944 meeting noted that transportation raids from September to the start of the Ardennes offensive were designed to provide the greatest possible assistance to ground operations on all fronts. Next in importance was exerting maximum pressure on German war production by attacking railroads and inland waterways, with the ultimate objective of collapsing the Reich's war economy. By 10 February 1945 the CSTC had developed a detailed plan for attacks on transportation assets leading to and from the Ruhr.[32] The plan was approved at the Air Commanders' Conference on 18 February, due in large part to Tedder's efforts. This was perhaps late, as Alfred Mierzejewski has argued, but as he makes clear, it also had the desired effects over time. The delay in this second major transportation offensive was in part the result of two unforeseen developments: the diversion of heavy bombers to interdiction attacks during the Ardennes offensive, and the subsequent effort to delay the

movement of 6th SS Panzer Army from west to east (the *raison d'etre* for bombing Dresden). Again, one confronts the almost unbounded aspect of the Reich's transportation network as a target set.

Most German officers and civilians interrogated after the war said destruction of railroads and canals was the most important factor in the speed and totality of Germany's defeat. Only Albert Speer and Hermann Göring thought oil more important.[33] However, several officials, including *Generalfeldmarschall* Erhard Milch and Speer himself, recognized that making such a choice was senseless in view of the degree to which transportation and oil raids were intertwined and complementary. Milch observed that "The decisive moment was relatively late; *it happened when you started large-scale attacks on our synthetic oil plants simultaneously with attacks on our communications.*"[34] Synergy of effects between the two, appearing in vital and often unlooked-for effects on the German war effort, proved extremely significant in undermining Germany's war effort.

Although this short assessment of Bomber Command's contributions to Allied victory in Europe is far from comprehensive, there can be no doubt that Harris' crews did their part in a variety of important ways, from creating the Third Reich's first armaments crisis and industrial dispersal during the 1943 Ruhr Offensive, to diverting huge numbers of resources to air defense, to playing, in many ways, leading roles in the oil and transportation offensives. Every one of these accomplishments cost the Third Reich's war effort dearly, and the ever-increasing friction and pressure Allied heavy bombers brought to bear—including, in a very significant sense, those of Bomber Command—ultimately undermined Nazi industrial production in every way that really mattered, ran the German military out of fuel and thus destroyed their mobility, and ultimately collapsed the German war economy. If the moral issues associated with Bomber Command's role in the war have held doggedly to center stage, perhaps it is time for us to think more deeply about the very real and effective things Bomber Command did to speed the end of the war, save the lives of Allied soldiers and European civilians, and help inflict such a serious and total defeat on the Third Reich that Germany has, since 1945, become one of least warlike countries on the planet. And, who knows, perhaps someday the command's brave airmen may even receive the campaign medal they so richly deserve.

Notes

[1] Sir Charles Webster and Noble Frankland, *The Strategic air Offensive against Germany 1939-1945, Volume III, Victory* (London: Her Majesty's Stationery Office, 1961), 112.
[2] John Terraine, *The Right of the Line* (Hertfordshire, UK: Wordsworth, 1997), 682-684; Denis Richards, *RAF Bomber Command in the Second World War: The Hardest Victory* (London: Penguin, 2001), 301-303; Max Hastings, *Bomber Command* (London: Pan MacMillan, 1999), 352; Randall Hansen, *Fire and Fury: The Allied Bombing of Germany, 1942-1945* (New York: NAL Caliber, 2008), 289, 291, 295.
[3] A. C. Grayling, *Among the Dead Cities: The History and Moral Legacy of the WWII Bombing*

of Civilians in Germany and Japan (New York: Walker and Company, 2006), 267-268. See also Stephen A. Garrett, *Ethics and Airpower in World War II: The British Bombing of German Cities* (New York: St. Martin's Press, 1996), 209. Hans Rumpf provides one of the strongest moral arguments against bombing in *The Bombing of Germany* (New York: Holt, Rinehart, and Winston, 1963).

[4] Adam Tooze, *The Wages of Destruction:The Making and Breaking of the Nazi Economy* (New York: Viking, 2006), 431, 513, 570-573, 597-602, 606, 671; Richard Overy, *War and Economy in the third Reich* (Oxford: Clarendon Press, 1995), 373-374.

[5] Diane Putney, ed., *Ultra and the Army Air Forces in World War II* (Washington, D.C.: Office of Air Force History, 1987), 42.

[6] Overy, *War and Economy*, 373.

[7] Ultra intercepts CX/MSS T67/94 (19 January 1944), T108/47 (28 February 1944), and T131/7 (22 March 1944), noted in Stubbington, Appendix A, Hut 3 Highlight Reports, 120.

[8] Tooze, 513; Horst Boog, "Harris: A German View," in Sir Arthur T. Harris, *Despatch on War Operations 23rd February, 1942 to 8th May*, 1945 (London: Frank Cass, 1995), xlii-xliii.

[9] Tooze, 570-573.

[10] Tooze *Wages of Destruction*. This brilliant work, based on German archival sources, gives us a new, compelling, and very different view not only of the German war economy, but of the effects of bombing. Tooze's work is in many ways a continuation of R. J. Overy's groundbreaking study, *War and Economy in the Third Reich*. For the myth of under-mobilization, see Tooze, 431. For the effects of the Ruhr Offensive in 1943, see 597-602. Overy notes on 31 that bombing in 1944-45, once again concentrated on the Ruhr and indeed most of Greater Germany, led to a second and much larger round of dispersal of German war industry and the eventual regionalization and collapse of the German war economy as the transportation system undergirding it virtually ceased to exist.

[11] Tooze, 597-598, 671.

[12] Ibid., 602.

[13] WF, Vol. 2, 258.

[14] Overy, *War and Economy*, 373-374.

[15] Tooze, 606.

[16] USAAF, *ULTRA and the History of the United States Strategic Air Force in Europe vs. the German Air Force* Frederick, MD: University Publications of America, 1980), 46. This source is a verbatim reproduction of a report written by Lieutenant Colonel Richard Haines, one of the few American officers with direct access to ULTRA decrypts, to his superiors at the end of the war, summarizing their effects on the air war.

[17] Overy, *War and Economy*, 373-374.

[18] USAAF, *ULTRA*, 15, 18-19, 44, 58, 80; Public Record Office, *The Rise and Fall of the German Air Force 1933-1945* (London: Public Record Office, 2001), 274.

[19] Sebastian Cox, "Introduction." In BBSU, xxix, xxxiv; Sebastian Cox, "Introduction," in Harris, Despatch, xxviii; Edward Westermann, *Flak: German Anti-Aircraft Defenses, 1914-1945* (University Press of Kansas, 2001), 202,

[20] Cox, "Introduction," In BBSU, xxix; Westermann, *Flak*, 202, 216-218, 294-298.

[21] Richard Overy, "An Assessment of the Strategic Bomber Offensive," in Royal Air Force Historical

Society (RAFHS), *Reaping the Whirlwind: A Symposium on the Strategic bomber Offensive 1939-45* (London: RAFHS, 1993), 31.

[22] Horst Boog, "The German Defences," in Ibid., 25.

[23] WF, Vol. 2, 258.

[24] See Christina Goulter, *A Forgotten Offensive: Royal Air Force Coastal Command's Anti-Shipping Campaign, 1940-1945*, (London: Frank Cass, 1995); BBSU, xxxviii; RAFH, *Air Intelligence*, 63-64; Probert, 99; Denis Richards, *RAF Bomber Command in the Second World War* (London: Penguin Books, 1994), 180-183, 298-299.

[25] Michael J. Neufeld, *The Rocket and the Reich* (New York, The Free Press, 1995), 273; Williamson Murray, "Reflections on the Combined Bomber Offensive," *Militärgeschichtliche Mitteillungen* 51 (1992), Vol. 1, 81.

[26] David Isby, ed., *Fighting the Bombers: The Luftwaffe's Struggle against the Allied Bomber Offensive* (London: Greenhill, 2006), 121.

[27] Tooze, 570-573.

[28] USSBS Oil Division, *Oil Division Final Report*, 2nd Ed., January 1947, 1-2, 4 and Figure 2, 86-87.

[29] Ibid., 25, Table 12 and 28, Figure 23.

[30] CCG, FIA, 8 November 1945, 30, AIR 20/8780, PRO.

[31] See Chapter 9 in Robert S. Ehlers, Jr., *Targeting the Third Reich: Air Intelligence and the Allied Bombing Campaigns* (Lawrence, KS: University Press of Kansas, 2009).

[32] "Review of the Operations of the Working Committee (Communications), Combined Strategic Targets Committee, October, 1944 – May, 1945," 14 June 1945, 20-21, AIR 40/1516, PRO.

[33] The Germans' military doctrine and plans, and indeed their very conception of war itself, were inextricably intertwined with and dependent upon the *Reichsbahn*. It therefore seems likely that most German senior officers had a predisposition towards ranking transportation attacks higher than oil attacks.

[34] CSDIC (UK), Interrogation Report CS/2126, entitled "Generalfeldmarschall a.D. Milch," 23 May 1945, 1, Spaatz/B134, LOC. Emphasis added. Milch included railroads and inland waterways as "communications" targets.