

*Strategic Bombing if Possible, but Possibly not Strategic
Bombing: an examination of ends, ways, and means
and the use of strategic airpower during the Great War*

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This paper is an offshoot of research conducted in preparation for the University of Calgary History conference of 2014 focussing on new perspectives of the Great War. My primary intent in that research was to explore the notion that air services were, using the recent educational concept of the Learning Organization, in fact precursors of this concept within a military context. One of the conclusions I came to is that this learning was not just happening within the air services but took place even at the national, or grand strategic, level where decisions had to be made both about how to use this new means of warfare and about the allocation of resources while continuing to support the needs of the army and navy. The former had to do with strategic bombing of enemy targets and the balance of this paper looks at how the concepts and practice of strategic bombing evolved in France, Germany and Britain.

Using the rather recent paradigm of 'ends, ways and means,' I think it is reasonable to say that while the purpose of interstate conflict did not change, in as much as the desired end was to bend the adversary to accepting one's own way of thinking, strategic bombing was a completely new and unprecedented means that opened up an equally new way of achieving the end. But, as the title suggests, I hope to show that while all three nations had political and military leaders who had reasonable clear vision of what might be achieved with the bombing of enemy targets far from the

battlefield, there were conceptual, technical and occasionally tactical issues that precluded them from realizing their vision.

Before looking at the experiences of these three nations, it may be appropriate to recall the evolution of both manoeuvre warfare (this only very broadly) and also strategic bombing concepts in the 96 years since the end of the Great War. I suggest we consider manoeuvre warfare because this was a prevalent concern in the years following the Great War. Military and civilian thinkers sought alternatives to the bloody shoving match that had played out in the trenches across France and Belgium. Basil Liddle-Hart was one of the principal British thinkers who sought a conceptual alternative to trench warfare. His writing on concepts such as the 'Indirect Approach' and the 'Expanding Torrent' were, at their nexus, attempts to return to the more or less free flowing campaigns of previous eras in Europe.¹ Liddle-Hart's ideas were not unique, one had but to look at the maxims of Sun Tzu who had written that the skilled general fixed the enemy in place with the ordinary force while using the extraordinary force to defeat the opposition.² And what could have been more extraordinary than strategic bombing?

The development of the ideas and practices of strategic bombing was in one sense very much like the return to manoeuvre warfare in that the concept needed much study in the interwar years; examinations of ends, ways and means could be found in a number of nations in these decades. Principal among the names of those supporting strategic bombing were the Italian Giulio Douhet, who expounded a total war against civilian populations with the aim of a quick and relatively bloodless capitulation of the enemy.³ There was also the American Billy Mitchell who was so vocal a proponent that he ended up being court martialed for having too publicly criticized and ignored his superiors.⁴ And finally there was the so called Father of the Royal Air Force Sir Hugh

¹ See Basil Liddle-Hart. "The 'Man-in-the-Dark' Theory of Infantry Tactics and the 'Expanding Torrent' System of Attack," *RUSI Journal* 66, no. 1 (Feb 1921).

² See Sun Tzu *The Art of War* translated by Samuel B. Griffith (Oxford: Clarendon Press, 1963).

³ Giulio Douhet. *War in the Air* translated by Dino Ferrari (Washington, D.C. : Office of Air Force History, 1983).

⁴ See LtCol Mark Clodfelter, "Molding Airpower Convictions: Development and Legacy of William Mitchell's Strategic Thought" in *The Paths of Heaven: the Evolution of Airpower Theory*, Phillip Meilinger, ed. (Air University Press: Maxwell AL, 1997), pp. 79-114.

Trenchard, who as head of the Royal Flying Corps in France during the war had curiously not been a proponent of strategic attack.⁵

But while there was much hypothesizing about the impact of the bombing of centres of industry, and to be honest population, and the resulting calamity within parent societies there was little, indeed almost no, evidence to support these thoughts. As Tami Davis Biddle points out in *Rhetoric and Reality*, her study of British and American bombing efforts in the Second World War, neither force had the ability to hit targets with precision in order for German surrender to be achieved.⁶ The end was sound, and timeless, but the means to employing the way lacked effectiveness and only by the end of the conflict did strategic bombing begin to achieve the precise results that the strategic thinkers had said were possible 20 years earlier.

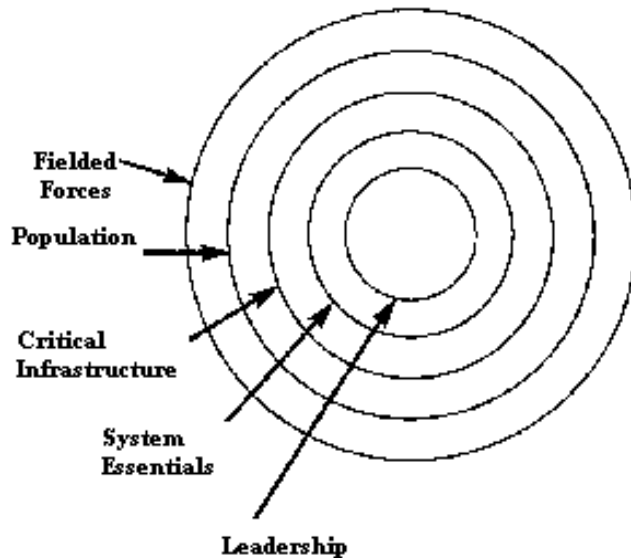
Even during the conflicts of the last 70 years bombing, usually tactical, but on occasion strategic, has often been less than precise with occurrences of collateral damage, including the unintended death of civilians, continuing to disturb both the general public and those who plan and conduct the operations, not to mention operational leaders both in the military and government. And thus the means, while better than it was, is still not the super-accurate kinetic weapon that we would seek to use, if we must use force at all. But this has not stopped airpower thinkers from continuing to examine the ideas and practicalities around the concept of strategic bombing, whether using bombers, cruise missiles or ICBMs to achieve the strategic end. The best known is an American, Col John Warden III, a USAF officer who served during the Cold War and whose Five Ring model would seem to make sense.

Warden argues that an enemy state is composed of five levels or rings of functions with the levels being more important to national self sufficiency and a desire to bend or not to the will of others: fielded forces // population // infrastructure (transportation grid, factories) // system essentials (power supply, food/water, finances)

⁵ Col Phillip Meilinger, "Trenchard, Slessor, and Royal Air Force Doctrine before World War II," in *The Paths of Heaven*, pp. 41-78.

⁶ See Tami Davis Biddle, *Rhetoric and Reality in Air Warfare: The Evolution of British and American Ideas about Strategic Bombing, 1914-1945* (Princeton, N.J.: Princeton University Press, 2002).

// national leadership. Warden's thinking is that air power can bypass field forces and attack one of the inner rings thus leading to a quicker capitulation of the enemy.⁷



His model is logical, but is it ethical? One has to ask: am I targeting rings which support the field forces or attacking (indirectly) the innocent population?⁸ In terms of ethical systems one asks, perhaps as Douhet did, am I about to do the least harm to the fewest people in order to achieve the desired endstate?

So ... what did the major powers – a France, Germany, and Britain think about strategic bombing in the period before the war? What was there experience 1914-1918? What did they learn? Did they think about these current day concerns? Were they even aware of them?

The French case is certainly interesting, and perhaps least studied by English language researchers. The truth is that of the three great powers operating in Western

⁷ Lt Col David Fadok, USAF, "John Boyd and John Warden: Airpower's Quest for Strategic Paralysis" in *The Paths of Heaven*, pp. 370-74.

⁸ Gary M. Jackson, Major, USAF, "Warden's Five-Ring System Theory: Legitimate Wartime Military Targeting or an Increased Potential to Violate the Law and Norms of Expected Behavior?" (USAF Command and Staff College, Maxwell AL, 2000), pp. 5-6.

Europe the French conception and execution of strategic bombing was highly mature, lacking only the technology to make it work.

Writing in the late 1930s, General Louis De Goÿs, deemed the father of French bombing, having commanded the *Groupe de bombardement 1* in 1914, provided his insights on questions of bombing, both tactical and strategic during *la Guerre de 14-18*. He noted the rapid development of day bombing during the first months of the war and the formation of the bombing group (three escadrilles of six aircraft each). But he also pointed out that bombing operations did not fare well in light of German fighter developments. Later in the war, when daylight bombing again became viable, he pointed out that daylight operations permitted mass, night attacks were still conducted by multiple aircraft operating individually. The breakthrough, although temporary, in day raids was the result of the development of a new aircraft, the Bréguet 14, which operated initially at better speeds and altitudes to the enemy fighters.⁹

De Goÿs also described the various targets of the bombing force: attack on enemy troops; attack on enemy lines of communication; attack on sensitive points in enemy territory (electrical stations supplying factories, blast furnaces, factories for chemical (including poison gas) products, and the Ruhr). But he points out that there had also been “reprisal attacks on the large population centres in enemy territory. The goal here was stopping these attacks on our own cities.”¹⁰ Attacks in the latter categories were directed by the “highest appropriate echelon of national defence ... the *Grand Quartier General* [GQG].” Indeed the bombing forces never selected their own targets, he noted. Regarding command and control he observed “The bombardment force played an auxiliary role....” This was because whatever the level of operation the force was supporting some directing HQ and not deciding operations on its own.¹¹ In De Goÿs commentary we see the interplay of ends, ways and means, interspersed with technology, innovation and ethical considerations.

Even as early as 1906 there had been, as Partrick Facon observes, considerable, but not universal interest in developing aircraft for military duties. Various roles were

⁹ René Martel, *French Strategic and Tactical Bombardment Forces of World War I* (Lanham, Md. ; Plymouth: Scarecrow Press, 2007). trans Allen Suddaby; ed Steven Suddaby originally published 1938, pp. x-xi.

¹⁰ Martel, p. xii.

¹¹ Martel, p. xiii.

seen for the air arm including reconnaissance and observation, the former both tactical and 'strategic', as well as air defence, air fighting and bombardment.¹² René Martel, himself an aviator during the war, explained in his 1938 study of French bombing that the French were thinking about the practicalities of bombing as early as 1911. In that year concept papers appeared and the Michelin brothers convened a bombing competition to test various bomb sizes, shapes and weights. Spherical missiles seemed in vogue, but these proved highly inaccurate. Requirements for bombsights and bomb release mechanisms also appeared and in 1913 the military conducted trials in anticipation of attacks against animate and inanimate targets.¹³ The following year French forces in Morocco used aircraft for bombing in addition to reconnaissance, developing a small bomb in the process. This 3 kg weapon would be used against the Germans in August 1914.¹⁴

By the end of September of that year it had been recognized that aircraft, bombing in conjunction with artillery, were having excellent results and Joffre communicated with subordinate HQs that this practice was to be encouraged. Note 523, issued on 27 September, listed various targets and functions and opened the door to deeper raids "to go after any enemy reserves or troop concentrations that [flyers] can find behind the line of fire"¹⁵ While these would today be seen as a 'battlefield air interdiction' targets the idea was unique for the time as it called for attacks in depth, something armies had not been able to effect with land based artillery. Joffre was to send another communication on 8 October in which he indicated his belief in the offensive potential of aviation: "... results show that combat aviation is in a position to render the greatest services and to justify the confidence that the High Command places in it."¹⁶

Throughout the fall of 1914 Joffre continued to say that the air arm was capable of much. He saw three principle roles: support to field armies, counter air, and bombing both tactical and strategic. The latter was a direction which was pursued by

¹² Patrick Facon, *Histoire De L'armée De L'air* (Paris: La documentation Francaise, 2009).

¹³ Martel, pp. 1-7.

¹⁴ Martel, pp. 8-9.

¹⁵ Martel, p. 18.

¹⁶ Martel, p. 19.

Major (and later Colonel) Joseph Barès, Joffre's senior aviator and his staff at GQG throughout the fall and into 1915.¹⁷ Before the end of 1914 *Groupe de Bombardement 1* (GB1) was established, reporting directly to GQG. The air staff at GQG did not want the group to be used solely as an extension to artillery, but rather to disrupt industrial capability "by demoralizing civilian populations that were more susceptible to panic..."¹⁸ Attacks were mounted on various targets in depth and while there was no intent or desire to attack civilians directly, the degradation of enemy morale was a desired effect. Strategic attack had, however, to be put on hold in 1915 due to heavy losses during deep raids. Bombing aircraft were then reassigned to AI and BAI targets; this would hold true until 1918.¹⁹

French leadership continued to appreciate the value of bombing and when Marshal Petain assumed command of French operations in mid 1917 he was quick to underscore the importance of air operations in general: "Il faut etre maître de l'air."²⁰ His new air officer Colonel Maurice Marie-Charles Duval prepared a restatement of French air doctrine which identified four functions: artillery direction; infantry liaison; interdiction of enemy lines of communication; and, finally, attacks on industrial and financial centres with associated impact on morale.²¹ Indeed, by 1917 the French were thinking in terms of strategic targets to cripple the German war effort and had effected a transportation 'blockade of the iron producing basin.'²² In terms of reprisal raids to degrade German morale, these were not taken on lightly, but they were executed.²³

Despite this the concepts of both tactical and strategic bombing remained central to French thinking. A March 1918 directive commented on both forms of bombing. Regarding strategic bombing it noted that bombing "seeks at all times to wear down the enemy by attacking military and industrial objectives (located normally far behind the front) ... with effects on morale and tactical situations normally far outweighing damage..."²⁴ A subsequent directive issued on 24 May provided further

¹⁷ Facon, pp. 42-4.

¹⁸ Martel, p. 23.

¹⁹ Facon, pp. 47-8.

²⁰ Facon, p. 63. 'We must command the air.'

²¹ Facon, p. 64.

²² Martel, p. 165.

²³ Martel, p. 168.

²⁴ De Lespinois, p. 14 (translation by author).

details on bombing. First, it confirmed bombing as one of four functions of aviation, the others being observation/reconnaissance both tactical and 'distant'; combat (ie to achieve air superiority); and assault (what we would today term close air support). Bombing was, once again, divided into tactical (an extension of artillery) and strategic. The latter was to "continually paralyze the economic life of Germany as well as its war industries by heavy and methodical attacks on industrial centres rail yards etc and to weaken the morale of the population by instilling a sense of insecurity in an area extending as deeply as possible into enemy territory." Aircraft intended for this purpose were to have "a load capacity of 500 to 1000 kg (these bomb loads alone deemed capable of sufficient destructive capacity) and a radius of action sufficient (if possible) to reach the Ruhr."²⁵

Despite these aspirations, the French Achilles heel remained the lack of a decent bombing aircraft. Even after the introduction of the Bréguet 14, one of the great problems which would dog strategic bombing was the apparent inability of French industry to produce an aircraft with sufficient range and carrying power. In 1918 the Farman-550 could lift only 500 kg compared to the 900 kg of the Handley Page -11.²⁶

Years later, British aviation commentator C.G. Grey opined: "The French produced some interesting and amusing bombers during 1917 and 1918 ... anyhow French bombing never amounted to much."²⁷ Perhaps Grey had not been privy to French thinking during that earlier war or had not managed to obtain a copy of Martel's volume. In any case, he seems to have underestimated French thinking and results. This is not to say that he was completely wrong for while the French had developed a clear sense of the strategic potential of bombing in achieving their strategic end, and had organized themselves from the outset to employ this new way of warfighting, they self admittedly lacked the technological means of achieving their intent.

The German experience before and during the Great War as much like that of the French. Recognition of the possibility of strategic bombing was recognized before the

²⁵ De Lespinois, p. 81-4 (translation by author).

²⁶ De Lespinois, p. 15.

²⁷ C.G. Grey, *Bombers* (London: Faber and Faber limited 1941), p. xxv.

conflict began and units were organized for the purpose but once again the Achilles heel was technology.

In 1912, Field Marshal von Moltke, Chief of the German General Staff, had twice written to the Inspectorate of Military transportation, at that point responsible for aviation within the War Ministry, asking specific questions about possibilities in arming aircraft with machine guns and bombs.²⁸ Von Falkenhayn, who would replace von Moltke, supported his predecessor's desire for an effective air service. As Grey later noted, by the end of 1912 the Germans were already well on their way, possessing about 200 aeroplanes of various sorts compared to about 25 in the RFC. He further pointed out that German technical specifications of the time called for aircraft to have both a bomb dropping and photo capability.²⁹ This sounds very forward thinking, and had the fundamental support of two very senior officers.

In March of the following year, the Office of Aviation Troops published the first doctrinal statement on aviation. As historians Jim Corum and Richard Muller have observed: "It is significant that even at this early date the combat role of aircraft – dropping bombs and fighting other planes – is mentioned as a primary mission of the airplane. It is also interesting that the German army recognized the importance of antiaircraft fire long before the outbreak of World War I." Indeed, the document provided extensive discussion of this last topic.³⁰ From this we might reasonably conclude that the Germans in no way expected that they had come up with a unique way of warfare; indeed they had but to look at the Michelin competition to see that the French were thinking along the same lines. In these circumstances, to not plan for defence against aerial attack would have been remarkably naïve. But looking back after the war Lt Gen Ernst Von Hoepfner, Commanding General of the Air Service, admitted that not all shared in the potential: "The very novelty of this instrument of warfare (in

²⁸ James Corum and Richard Muller, eds., *The Luftwaffe's Way of War: German Air Force Doctrine 1911-1945* (Baltimore: The Nautical and Aviation Publishing Company of America, 1998), pp. 31-3.

²⁹ Grey, p. 33.

³⁰ Corum and Muller, p. 37.

general only the younger soldiers had shared in its development) caused us to underestimate its value."³¹

Still, within weeks of the outbreak of hostilities, there was sufficient intellectual and organizational flexibility to allow for the creation of a bombing organization in Flanders responsible to the general HQ rather than the local field army.³² Indeed, the intention was to bomb the UK from Calais but because of British had remained in control of Ostend this was not possible. Nonetheless, the unit was formed and used in the West then on the Eastern front and finally in the southern operating area throughout 1915.³³ At the same time, however, actual bombing techniques and munitions were deemed ineffective; prewar interest had not amounted to effective practice.³⁴ This criticism, coming Von Hoepfner, gives us some indication of the likely frustration of those who could sense the potential of a way of direct attack against the enemy will, but had to live with a means that had was having practical teething problems.

While the Germans would be unable to attack Britain with fixed wing aircraft for some time, their airships were able to reach behind the lines. Perhaps the most sensational of these operations was the attack on Antwerp in September 1914 where bombs fell not far from the Royal palace. Commenting on these attacks Grey later noted:

Under the terms of the Hague Convention certain nations agreed to, among other things, 'to prohibit for a period extending to the close of the third Peace Conference (which had not yet been held) the discharge of projectiles from balloons or by any new methods of a similar nature.' As neither France, Germany, Italy, Japan, Russia, nor Spain were signatories to this declaration it was, as the British official manual on international war stated, 'therefore practically without force.'

³¹ General Ernest von Hoepfner, *Germany's War in the Air: the Development and Operations of Germany's Military Aviation in the World War*, trans. J. Hawley Larned (Nashville: The Battery Press, 1994 (original version 1921)), p. 3.

³² Peter Kilduff, *Germany's First Air Force 1914-1918* (London: Arms and Armour Press, 1991), pp. 8-16.

³³ Kilduff, pp. 17-18.

³⁴ Von Hoepfner, p. 20.

The same manual (*Land Warfare*) lays down that 'a town that is defended by detached forts, though they are at a distance from it, is liable to bombardment, for the town and forts form an indivisible whole. The town may, perhaps, contain workshops and provide supplies which are invaluable to the defence, may serve to shelter a portion of its Garrison when not on duty.' That, from an official British source before the war 1914, is a complete answer to all those foolish people who bleat about the bombing of civilian populations."³⁵

Grey's comments would be published in 1944, but 20 years earlier Von Hoepfner had already written about these matters.

In our attacks we kept within the limits of the Second Peace Conference at the Hague. The French representatives had insisted on permission to drop missiles from aircraft. On the other hand, we held the viewpoint at the beginning of the war of that [bombing] could be used just as the other weapons recognized by international law in the practice of land warfare, i.e. only against fortresses and other places that might be a military importance within the theatre of operations, or the area within which the armies were fighting. Thus we imposed limitations on ourselves. England went even further; in the fall of 1914 it destroyed the Z II and its hanger at Düsseldorf, and then directed its attacks against military targets which were far removed from the battlefields. But it still adhered to the principle of sparing the civilian population. France went in the other direction. On December 4, 1914, it attacked the entirely defenseless city of Freiberg, 80 km back from the lines, and therefore, was the first power to carry out the horrors of aerial warfare to a thoroughly peaceful locality. France was not long and feeling the consequences of it."³⁶

Curiously Von Hoepfner does not mention the much vaunted Zeppelins on which Germany had placed much hope in the decade before the war, and there is no question that these aircraft were able to conduct offensive sorties deep behind the front, both against France and Britain. Of the bombing in early 1915 the German general later wrote:

³⁵ C.G. Grey, *The Luftwaffe*, (London: Faber and Faber, 1944), p. 44.

³⁶ Von Hoepfner, pp. 20-1.

We did not dare to remain idle in the face of the frequent attacks which were made on our unfortified cities situated far behind the front lines. English squadrons shared in these attacks later on. The justice of our bombing raids against Paris and London can be denied only by some malicious group of people for the character of both cities removed any doubt. They were known to be heavily fortified and were centres of the war industrial activities. Our airships and later our bombardment squadrons never selected targets so far removed from the theater of war unless it were an contestable he established – usually by photographs – that they were important points in the enemy’s plan for the conduct of the war or the procurement of supplies. In these cases the military object was the destruction of some feature that was considered to be a vital importance to our opponents. Even in the attacks on Paris and London our attacking units have targets that were definitely stated, e.g., railroads, large barracks, factories, docks and arsenals. Our principle of concentration on the target prevented a scattering the force on secondary undertakings. Our enemies knew as well as we did that military targets are not the only things that are hit in a bombing attack and France is responsible for the use of bombing over such a wide area.³⁷

He also remarked on strategic effect. An attack on Paris was mounted on March 20–21 1915. “The first large-scale attack on the central point of French war measures was a success. The extent of its influence can be found in the enemy’s press and in the debates in the French Chamber of Deputies.”³⁸

In 1916, attacks against England by airships resulted in 36,590 kg of bombs being dropped, of which approximately 16,000 fell on London. “By this means they had caused considerable material damage to military and industrial establishments, and it caused the British to keep available in England a great deal of anti-aircraft material and many aviators, thereby relieving our friends in Flanders and in France to a corresponding extent.”³⁹ The effect here was not felt only at the strategic level, but also at the operational and tactical levels of war as indirectly strategic attack had made the life of German flyers on the Western front just a little less dangerous.

³⁷ Von Hoepfner, p. 54.

³⁸ Von Hoepfner, p. 55.

³⁹ Von Hoepfner, p. 57.

By 1917, the Gotha G IVs were entering service and these allowed for effective attacks on England along the lines of previous Zeppelin attacks by the German Navy. The Gotha unit, informally known as the *Englandgeschwader*, began operations against England on 25 May 1917 when 4900 kg were dropped on troops concentrations at Folkestone and on the Dover fortress. On June 13, a 4400 kg attack on London killed 162 and wounded 432. The raid leader later said: "From the observers' reports it is emphasize that a railway station in the city, as well as the Thames bridge, probably Tower Bridge, were hit. Of all of the other bombs it can be said that the majority of them fell among the docks and city warehouses."⁴⁰ There seems here to have been no intent to attack non-military targets. All of the aiming points described would have been related in some fashion to the war effort, principally the transportation grid. Undoubtedly, however, the Germans would not have been ignorant of the morale effect of attacking such targets in the middle of London. In today's parlance, and even in terms of the thinking of the day, these were strategic attacks.

The French were equally under the sights of German bombers. "Paris had to undergo second expiation for the directing powers of the Entente persistent attacking the undefended German cities in a manner that was not in keeping with international law, and in violation of the laws of humanity." Thus, on 8 March 1918, 1, 2, 5 and 7 Bombardment Squadrons combined to drop 23,000kg of bombs on Paris. Von Hoepfner observed that: "The two nations differed in their reaction to our bombing attacks. The British press renewed its demands for reprisals; Paris on the contrary, feeling that it was in a greater danger than London from the threat of German bombardment squadrons, gave expression in the press of the desire to come to an understanding with Germany on the subject of bombing raids."⁴¹ "The opposing views on the subject which were held by the British and the French, as the result of her having made retaliatory raids on the French capital to make up for the damage that has been done by British bombing squadrons, might take on a more serious aspect if we made further attacks." This gave rise to discussions within the German administration about

⁴⁰ Kilduff, pp. 70-1. See also Von Hoepfner, p. 112.

⁴¹ Von Hoepfner, p. 145.

the impact of bombing on German morale but these did not lead to discussions with the French.⁴²

In April, the Royal Air Force was formed and Von Hoepfner recorded the impact of IAF attacks on Germany. "While the former attacks against undefended German cities had been described as reprisals, the British press now threw aside the cloak and spoke out freely, stating that this aerial warfare must be waged 'because it is the only means by which a part of the woes of war can be brought home to the German people who have gotten off scot-free except during the time of the Russian invasion.'"⁴³

During May, additional strategic attacks were mounted by the Germans. Von Hoepfner noted that about 350,000 kg were dropped on London during the first week of May but these attacks were soon to fall off dramatically as Germany ran out of the resources needed to keep the bombers operating. To borrow from Clausewitz, the Imperial Air Service had, in terms of strategic bombing, reached its 'culminating point.' Unlike the French, who had experienced a problem with technology, the Germans had had workable weapons systems, but had, at the level of the state run out of the other means – resources and time – to see this new way of warfare allow them to achieve the end that they sought.

Members of Britain's Committee on Imperial Defence and its subcommittees had had an clear awareness of the possibility of the use of aircraft for bombing before the war. As early as January 1909, the Esher subcommittee had reported that they considered the dropping of high explosives "cannot be dismissed as an impossible operation of war."⁴⁴ Later that spring, Lord Montagu of Beaulieu suggested that aerial bombing would be used by a combatant nation if it was thought that such a means would contribute to a decisive victory.⁴⁵ Moreover, he said, London was defenceless against strategic air attack.⁴⁶ These comments were perhaps framed by the popular

⁴² Von Hoepfner, p. 146.

⁴³ Von Hoepfner, p. 150-1.

⁴⁴ Neville Jones, *The Origins of Strategic Bombing* (London: William Kimber, 1973), p. 26. See also Hugh Driver, *The Birth of Military Aviation, Britain, 1903-1914* (London: The Boydell Press, 1997), pp. 207-14.

⁴⁵ Jones, p. 27.

⁴⁶ John H. Morrow, *The Great War in the Air* (Shrewsbury: Airlife, 1993), pp. 20-1.

fiction of H.G. Wells' 1908 *The War in the Air*.⁴⁷ Curiously perhaps, during this period the British seemed more interested in understanding how aircraft worked, how they might be used for bombing and how to defend against them.⁴⁸ By comparison appeared little if any interest in using aircraft for strategic offensive operations.

While the formation of a single flying service was briefly achieved with the original creation of the Royal Flying Corps (RFC) in May 1912, the split between army and navy flying operations took place 1 July 1914. The RFC as it went to war in the summer of 1914 was not only the least technologically prepared of the major air arms, but one focussed exclusively on support to the ground component. As Squadron Leader, and later Air Vice Marshal, E.J. Kingston-McCloughry would record in the 1930s, "Rightly or wrongly, new ideas or innovations appear to have been viewed with suspicion, and to suggest taking aircraft from the battle zone to be used strategically in the offensive was almost a heresy: proposals for the production of heavy long-distance bombers also received scant encouragement."⁴⁹

By comparison, the Royal Naval Air Service (RNAS) was from the outset alive to the possibilities of deep bombing for strategic effect and devoted considerable effort toward developing concepts and practicalities for strategic bombing. At the same time, Churchill and other in the RN hierarchy were not blind to defense against German attack and sought practical means to defend against the Zeppelins.⁵⁰ During the first 18 months of the war, RNAS was to conduct deep, but not strategic, attacks on German air targets and was in early 1916 ready to collaborate with French in attacking German industrial capability, just as soon as resources are available, but this would be stymied by RFC demands for more and better aircraft.⁵¹ Bitter debates about proper roles and allocation of scarce resources would continue throughout 1916. There simply were not sufficient technologically capable aircraft manufacturers to deal with the demands of

⁴⁷ H.G. Wells, *The War in the Air* (London: T. Nelson & Sons, 1908).

⁴⁸ British aviation periodicals *The Aeroplane* and *Flight* reported weekly on aviation developments in the UK as well as on the continent, with much focus on France and Germany. From time to time there were discussions and editorials about the need to be ready for defence against aircraft.

⁴⁹ E.J. Kingston-McCloughry *Winged Warfare: Air Problems of Peace and War* (London: Jonathan Cape, 1937), p. 21.

⁵⁰ Winston Churchill, "Air Defence Memoranda of 1914," in *The Impact of Air Power*, Eugene Emme (Princeton: Van Nostrand, 1959), pp. 27-9.

⁵¹ Jones, pp. 77-8.

aviators operating over the front and at the same time to develop and manufacture effective long range bombers.

As seen above, by 1917, the notion of reprisal raids began to creep into thinking and actions. On 14 April, the RNAS attacked Freiburg, but the aiming point was not a particular war related facility. Rather, the target was the city centre, this in retaliation for sinking two hospital ships in March. By the summer the Government was seeking more reprisal raids for Von Hoepfner's G plane attacks on southern England.

Coupled with difficulties of scarce resources, these political decisions would be part of a larger strategy calling for an independent third service and the establishment of a strategic bombing force. The Smuts committee's report to Lloyd George resulted both in the creation of the RAF and a separate strategic bombing force – the Independent Air Force.⁵²

Long before this, the RNAS have conducted detailed studies on what targets types if attacked would be most detrimental to German war effort. Lord Tiverton had also studied how best to attack them (ie what weight of bombs would be needed), with what aircraft and from where. The RNAS had already established the 'Luxeuil' Wing (No 3) in 1916/17 and was now able to recommend the Verdun area as best for hitting chemical, battery, aero engines and steel production. In attacking these industries there would be added benefits from degrading enemy morale and diverting scarce war resources for air defence.⁵³

The very real practical problem was how to build up the bomber force and despite Smut's recommendations and the Government's decisions and wishes this would remain conundrum throughout most of 1917 and on into early 1918.⁵⁴ Added to this very significant issue was the problem of weather which, as strategic bombers were to find 25 years later, was not to be dismissed particularly during the winter months. Perhaps the most pressing intellectual challenge was to be the absence of a concept of strategic bombing and the associated doctrines and procedures.⁵⁵ But by now even the

⁵² Anon., "Magna Carta of British Air Power" in *The Impact of Air Power*, pp. 33-7.

⁵³ Jones, pp. 103-110.

⁵⁴ Churchill, "The Possibilities of an Air Offensive in 1918", in *The Impact of Air Power*, pp. 37-40.

⁵⁵ Jones, pp. 172-5.

head of the RFC in France, Hugh Trenchard, long wedded to support for the field army was coming around to the benefits of strategic attack:

Until the British Army has sufficient aircraft to hold and beat the German Air Force, the bombing of Germany is a luxury; once the Army is sufficiently equipped, the bombing of Germany becomes a necessity. That is to say, it becomes necessary to attack the German Army in Germany, and to strike at its most vital point – its sources of supply.⁵⁶

Kingston-McCloughry went on to observe that if and when strategic targets could be engaged Trenchard's superior, Sir Douglas Haig, in writing about bombing policy in November 1917 stated "I have no reason to suppose that the bombing of open towns for the purpose of terrorizing the civil population is a method of warfare that would be approved by H.M Government, nor would I recommend its adoption."⁵⁷ The dilemma was one seen already by the RNAS as well as French and German decision makers: the efficacy, or rather uncertainty of industrial attack. Kingston-McCloughry noted that with the aircraft and weapons available it was recognized that destroying one precise would be extremely difficult that there might be more to be gained in counter morale attacks where the effect was on industrial output: no workers (these having fled or refusing to work) meant no production.⁵⁸

Kingston-McCloughry went on to capture the essence of the problem.

The operations ... reveal the long struggle between the strategically defensive and strategically offensive policies over the decision as to how much air effort was needed for direct support of the army, and how many aircraft should have been allocated for bombing vital centres behind the strategical [sic] battlefield. We see that the outcome of the struggle was a victory for the defensive policy, and production was concentrated upon fighters to the detriment of long-range bombers.

⁵⁶ Kingston-McCloughry, p. 23.

⁵⁷ Kingston-McCloughry, p. 31.

⁵⁸ Kingston-McCloughry, p. 35.

The actual reason for our connection was lack of suitable bombers, due to the belief in appreciation of their potentialities, combined with the failure of supply of such aircraft as has actually been ordered.⁵⁹

If there had been concerns about morality, as noted by Kingston-McCloughry's reference to Haig, these did not seem to have caused the British politicians to waver, or Kingston-McCloughry to refer to them in his summation.

That the British had had a general awareness of strategic bombing before 1914 and had come to exercise the possibility by 1918 is clear. That they had developed a system of thinking about how to identify and engage useful targets is equally clear, even if they did so less than perfectly. They also understood the impact on morale and the related moral implications of bombing's imprecision, and at least Haig recorded his opposition to attacks, even if unintended, on civilians, this despite political and public desire for reprisals.

This focus on technology, and a relatively lesser concern for morality, are trends that appear in the thinking and practice of all the belligerents in the Great War. Indeed we have not looked at the American case, but here too – certainly in the post war thinking of Billy Mitchell and his successors – we find an emphasis on perfecting the technology. This sort of thinking is clearly evident in an early Cold War reflection by US Air power historian and practitioner I.B. Holley. In *Ideas And Weapons*, he drew three conclusions about the common experience of the Great War. First quantity did not win over quality. Better planes, even if fewer, could hold off a more numerous foe. Second, “the experience of the war also demonstrated that where military authorities failed to formulate a doctrine to exploit each innovation in weapons to the utmost they suffered further disadvantage. The example of bombing aircraft presented an outstanding instance of this neglect.” Holley criticized authorities for not developing bombing types as a priority. Third, he concluded that the first two problems were the result of a poor organization. What was needed, he felt, was, first, a complete and accurate amassing of knowledge concerning a new capability and second an effective

⁵⁹ Kingston-McCloughry, pp. 52, 54.

decision making apparatus, or rather apparati, across all level of government and the military so that the new technology could be converted into a military capability.⁶⁰

While Holley's criticisms might seem reasonable to us today, or might even have made sense when recorded just 35 years after the events of the Great War, we can only, I think, accept that at the time the leaders and thinkers, both in uniform and morning coats, had their hands full trying to convert the visions of only a few years into those technologies and concepts that would lead technically, tactically and morally to a true strategic effect. They did not fail; indeed, even a century later we are still trying to master the ends, ways and means of strategic bombing.

⁶⁰ I.B. Holley, *Ideas And Weapons: Exploitation of the Aerial Weapon by the United States during World War I; A Study in the Relationship of Technological Advance, Military Doctrine, and the Development of Weapons* (New Haven: Yale University Press, 1953), pp. 175-6.