The Impact of the First World War on the Theories of Air Power

The First World War was the first war in which the use of air power became significant.

Though there were common experiences - both the Axis and Allied forces employed strategic bombing with little real effect for example – the ideas that emerged in the early years after the war were not all in agreement. In addition to understanding and learning the lessons of the air war, it will be seen that some of the ideas that gained much support were aimed at avoiding a repeat of the last war which had been a long drawn out affair involving great loss of life.

These theories were not, of course, developed in a vacuum; other factors such as the political, geographical and economic situation of the various powers also had great influence. This paper, will however, concentrate on the relationship between the actual experience of air power and the ideas on how it would be used in future conflicts.

This paper will first describe the use of the air during the war, particularly how its usage developed, by examining the various roles in which air power was employed and analysing their effectiveness. Then this paper will look at each of the key powers and the theories that came to prominence in the early post-war years.

Due to space limitations, this paper will concentrate on the experiences of the Western Front and will not include the war at sea.

Development of Air Power During the First World War

Prior to this war, the use of the air had generally been limited to observation via balloons. Despite this, there was much speculation regarding it’s potential and popular novelists such as Jules Verne and H.G. Wells wrote of the use of the air in the future predicting that it would have a significant effect, particularly that it would be used as a weapon of fear through the attacking of cities (Buckley, 1999). So much so that, the 1899 Land Warfare Convention was updated during the Hague Conference of 1907 to read (amendment in italics): “The attack or bombardment of, by whatever means, of towns, villages, dwellings or buildings which are undefended is prohibited.” (Biddle, 1994, p. 142).

During the First World War, air power was used by all nations in a wide variety of roles. Indeed, with the exception of the use of airborne troops, aircraft had been employed in all the roles that they could be and these had been developed and refined during the war. In fact, the usage of airborne troops had been proposed by Mitchell in 1918 (Buckley, 1999).

Reconnaissance, Observation and Artillery Spotting

The initial use of aircraft in the war was in the role of observation and reconnaissance, quickly followed by use in the artillery spotting role. Aircraft continued to be used in these ways throughout the war and indeed, it is in these roles that it can be argued that they had the most effect on the war and the way that it was fought – at least until the later stages of the war when close air support was to make it’s mark. Buckley even goes so far as to argue that
improved accuracy and effectiveness of artillery fire through the use of aircraft, including balloons, in these roles “greatly contributed to the defensive nature of the war” (Buckley, 1999, p. 47); artillery being stronger in defensive roles than in the attack.

The use of the air to observe and detect the enemy was also significant. In 1914, early in the war, aerial observation had significant successes. On the Western Front, French aircraft observing the advancing Germans detected their change in direction to the east around Paris. This information was used to bring about the battle of the Marne (Morrow, 1993; Murray, 2002; Buckley 1999). The battle halted the German advances and led to the establishment of the German defensive line on the Western Front which was to remain until nearly the end of the war (Howard, 2002).

On the Eastern Front, the German’s great victory over the Russians at Tannenburg also owed much to aerial reconnaissance (Murray, 2002; Buckley 1999).

Aerial observation continued to play a major role throughout the war as the Americans found out when they joined the conflict. American observers in action in the area of Belleau Wood in June 1918 reported that US forces had been under very accurate artillery bombardment due to the work of German observation aircraft. Their own observation aircraft were unable to gain intelligence on German troop movements as the Germans were in control of the air (Frandsen, 2003).

The importance of air observation and reconnaissance was quickly recognised, leading to efforts to deny the enemy the advantage it provided and the development of the air superiority role.

**Air Superiority**

As soon as the effectiveness of aerial observation for reconnaissance and artillery spotting was seen, efforts were made to it prevent the enemy from gaining such intelligence. This led to “fighter” or pursuit aircraft being used to both attack enemy airborne observers and to support their own aircraft. Throughout the war, the fight for air superiority was affected by the inter-relationship between three key factors: technology, numbers and tactics; an advantage in one area would be countered by changing one or both of the others. The fight for command of the air over Verdun in 1916 is seen as being significant as it showed the importance of air superiority and the role of fighter aircraft in obtaining it (Buckley, 1999) and also that it marked the transformation of the German air service from a provider of information to a direct combat force (Morrow, 1993).

Initially the German Air Service gained air superiority despite, in some cases, inferior machines and initially fewer aircraft by a change in tactics that saw an increased number of fighter aircraft being used solely to keep enemy observation aircraft from the skies. Once, this had been achieved, their own reconnaissance flights went into action. Once the attack on Verdun had begun, at first the Germans were able to maintain control of the air and used this to conduct air interdiction strikes at the French rail network impacting the re-supply and reinforcement of the French forces. The French countered swiftly with increased numbers, similarly concentrating on fighter aircraft and regained control of the air. Both sides put more and more aircraft into the fight with the French eventually gaining the upper hand (Morrow, 1993; Buckley, 1999).

Ultimately, though, the fight for control or command of the air became, as on land, a war of attrition. As Buckley states: “the technological battle for air supremacy swung to and fro and
was eventually decided by weight and effective allocation of resources.” (Buckley, 1999, p. 53).

Close Air Support

The role of close air support was initially carried out by observation and reconnaissance aircraft as an extension of their usual operations (Muller, 1996; Buckley, 1999). This was first seen in 1917 with the British successfully using them to support attacks at Passchendaele and then at Cambrai where they provided support to British tanks by attacking German artillery. The offensive was a great success resulting in significant gains in territory. Within one week though, the Germans had counterattacked, also with strong close air support, and had re-taken the land lost to the British (Murray, 2002; Buckley, 1999).

Close air support, combined with air superiority continued to play a major part in battles of the Western Front through to the end of the war, particularly contributing to the breakthrough by the Germans in March 1918 in Operation Michael and to the success of the Allies at the battle of Amiens. This success though, came at a great cost with all air forces experiencing high-casualty rates when pressing attacks against ground targets (Murray, 2002; Buckley, 1999; Muller, 1996).

Strategic Bombing

Despite the Hague Convention of 1907, civilian as well military targets were bombed during the war. Although there were some successes - the Royal Naval Air Service (RNAS) destroyed Zeppelin Z9 in it’s shed (Murray, 1999) for example – little material damage was caused despite the efforts made; the RAF dropped 543 tons of bombs for the cost of 352 aircraft lost or damaged (Buckley, 1999) and the Germans dropped over 8,000 bombs on the Britain resulting in just under 5000 killed or injured but with little impact on economic or military capability (Morris, 1925).

There was, however a psychological effect; when, in daylight, the first heavy aeroplane bombing raids on London took place in May and June 1917, the public were shocked at, apparently, being defenceless against such attacks. The government reacted quickly though and improved air defences were soon put in place with the result that within three months, the Germans had changed to night bombing to reduce their casualty rates but also with a corresponding reduction in bombing accuracy (Murray 2002, Buckley 1999, Juniper 2003).

This cycle of events – daylight bombing leading to improved defences leading to increasing casualty levels in the bombers leading to night bombing leading to a reduction in bombing accuracy was a common experience amongst those nations engaged in strategic bombing; mainly the British, Germans and Italians.

Air Interdiction

This was an area that did not see a lot of use during the war as the roles previously discussed took precedence. The Russians however, were successful with their use of reconnaissance bombers against military targets such as railway junctions and troop concentrations (Jones, 1977).
Later in the war, it appears to have been in limited use and sometimes only as a fallback option if the “strategic target” such as an airfield, could not be reached or located. Even when it was the sole purpose of missions, it was not very effective. During the battle of Amiens in August 1918, in the space of 4 days, 350 sorties were flown against bridges over the Somme to trap the retreating Germans. In all these attacks, only two hits were achieved, none of which prevented usage of the bridges. Inaccurate bombing – bombs were typically aimed by eye – and the low power of the bombs being the main reasons for the poor performance (Price, 2001).

**Development of the Theories of Air Power Post-World War 1**

**Great Britain**

At the end of the First World War, Britain possessed an independent air force – the Royal Air Force – created in 1918 as one of the responses to the air threat posed by the attacks on London.

The driving force behind the direction that the RAF was to take after the war was Air Chief Marshal Sir Hugh Trenchard. He pursued two inter-related aims: to retain the RAF as an independent force and to focus on strategic bombing as it’s primary mission. He saw this role as having the potential to be the decisive factor in future wars even to the extent of being able to win wars independently of the navy and army. His reasoning was that targeting the means of an enemy to go to war, including the civilian population, rather than their instruments of war was more effective and would lead to shorter wars thus avoiding a repeat of the slaughter of the previous war. Of course, this was a role that could be carried out without the involvement of the other armed services and so strengthened his argument for an independent RAF (McIssac, 1986; Murray, 1996; Murray, 2002; Buckley, 1999).

These views, although strongly supporting Trenchard’s objectives, do not bear out the experience of the war. Air Staff Memorandum No. 11A, March 1924 which, when discussing the alternatives of either (1) bombing targets in population centres to attack the enemies morale or (2) attempting to gain air superiority by targeting enemy airfields, clearly stated:

“The latter alternative is the method which the lessons of military history seem to recommend, but the Air Staff are convinced that the former is the correct one.” (Murray, 1996, p. 117).

Additionally, this theory, though having some substance based upon the initial panic in London at the onset of bombing, did not take into account the fact that bombers suffered increasingly high casualty rates as air defence systems became more sophisticated (Buckley, 1999).

**Germany**

Due to the terms of the Versailles Treaty, the German air service ceased to exist with, officially, no personnel and no military aircraft. Hans Von Seeckt, the German chief of
general staff ensured however, that a number of air service officers were included in the new German army.

The approach taken by von Seeckt was to conduct an extensive programme of military research to better learn the lessons of the war. This knowledge was then used directly to formulate how air power would be used in future conflicts. Their key finding was that their defensive approach had been their major failing; by waiting for the Allies to cross their lines before engaging them, they had, in effect, allowed the enemy to control the airspace by massing their forces where they chose to.

It was well understood that effective use of air power was only possible once air superiority had been achieved and so this would be the first objective in any conflict. Once, this was in place, the air force would then be able to support the land forces typically through interdiction missions identified by the army against such targets as troop concentrations and transportation networks to impact the mobility of the enemy.

Strategic bombing was given little attention as there were two clear lessons from the war: firstly that the Allied bombing of Germany had been ineffective in terms of economic, military and civil morale impact and secondly, that well organised defences had inflicted heavy damage on bomber aircraft (Corum, 1996; Murray, 1996; Buckley, 1999).

The overriding doctrine that evolved though, was one of flexibility with no one role being significantly emphasised. How the air forces would actually be used would be determined by the particular needs of a particular situation.

**United States**

The air force ended the war under the command of the army and one of the objectives of the chief air power advocate of the early post-war years – Billy Mitchell – was to gain independence for the air force.

The United States had come late to the war and so had not gained the same depth of experience as the other combatants. To counter this, they studied the lessons learned by the other powers and then used these to develop theories of air power. Although, towards the end of the 1920s, the emphasis shifted to strategic bombing along similar lines to the RAF, the view initially was that the air force should consist of a balanced force. Mitchell suggested ideal ratios of 60% fighters, 20% bombardment and 20% observation with the aim being to first gain air superiority through attacking enemy air assets before moving onto strategic bombing missions. This was an approach directly based on the actual experience of using air power in the war (Murray, 1996).

The US doctrine, over time though, became closer to that of the British, focusing on strategic bombing as the primary mission. Where they differed however was that they considered industrial targets as being the key to success rather than seeking to destroy the morale of the nation by bombing population centres (Buckley, 1999).
**Conclusion**

World War One saw the effective use of aircraft in a wide variety of roles. In close air support, observation, reconnaissance, artillery spotting and air superiority, it was one of the “differentiators” in achieving a breakthrough in the static warfare on the Western Front in 1917 and 1918 in such battles as Cambrai, the Operation Michael offensive and the subsequent Allied counter attacks.

In the roles of strategic bombing and air interdiction it was less successful though with large numbers of missions resulting in only minimal impact.

Given these experiences, which were shared by Great Britain, the United States and Germany, it is interesting that the Allies focused primarily on strategic bombing and the Germans on direct army-support roles. In direct contradiction of the evidence of the First World War, the Allies looked to strategic bombing as both a way to avoid the drawn-out attritional war on the Western Front and as a way to maintain, or gain in the case of the US, independence of their air arm by way of it’s decisive capabilities independent of the navy and army.

The German Air Service however, made great efforts to study what had actually happened in the war and used those lessons to develop air power doctrine that directly supported ground forces. The effectiveness of this approach would be borne out during the Spanish Civil War and the early years of the Second World War.
Bibliography


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