

## Conclusions

In many ways the story of the Western Front is one of the quest for the solution to the problem of trench warfare. The interesting point is the perception that trench warfare was a problem, caused by dissonance between warfare as described in the *Field Service Regulations* and the realities of trench warfare.

Several different approaches were tried to resolve the problem, each indicative of the way in which the problem was conceived. Strategic approaches were considered, shifting the emphasis away from the Western Front. This led to the Gallipoli campaign in which a miniature Western Front was created on the Peninsula. In Palestine a more open form of warfare did emerge but the campaign, although much less costly than the Western Front was still very expensive from a logistical point of view and relatively indecisive. No quick end to the war could be sought in Palestine.

A technological resolution was attempted, developing and employing new technologies. A search for a technological solution invariably starts with a perception that the problem is technological in nature. In accord with the degree of truth in this notion, technological solutions achieved a degree of success. The best known of these were tanks. The diggers' initial experiences with them, especially at Bullecourt, were unfavourable but improved models and tactics were extremely successful in the final campaigns. The Australian tactical integration of tanks into a combined arms team that also included artillery, infantry and aviation proved a war winning combination at Hamel and Amiens. But tanks were never necessary for diggers to succeed in battle.

If we define a decisive weapon as one without which the result of the war might have been different, then it is hard to make a case for any single weapon as decisive. If we say that a decisive weapon was one that altered the nature of the battlefield, then quick firing artillery, barbed wire, poison gas, trench mortars, hand and rifle grenades and automatic weapons were all decisive. From a logistical point of view, mechanical transport was decisive. Many other, humbler, technologies played vital parts.

Then there were the tactical approaches. In accordance with British doctrine, the notion of the decisive battle was superimposed upon the campaign. With it came the concept of the wearing out battle, of "engaging" the enemy down until the time was ripe for the decisive battle. The term "attrition" is often used for this process, but the meaning gets confused because it is normally considered to be a process of economically trading resources. This was not at all the concept behind the wearing out process, which was

simply to get the enemy to commit his reserves. Under this doctrine, the battles of 1918 were counted, retrospectively, as the decisive battle.

Other British officers concluded that the Western Front most resembled a gigantic siege. This meme was not incompatible with the wearing out battle, but it had serious drawbacks. As its strategy, it offered little hope of any kind of decisive success. As tactics, the advice in the *Field Service Regulations* contained many errors. It led, for example, to the close trench lines at Gallipoli until their folly was realised.

The *Field Service Regulations* helped propagate the meme that held the battle to be the focus and object of the campaign. At Gallipoli and again at Gaza, the British commander sought battle. Since battle requires the enemy to agree to fight, this can normally be achieved only if the enemy is forced to do so or believes himself to have the advantage. Accordingly, some British commanders were for a long time willing to accept battle with the Turks under disadvantageous circumstances. Such a process forms a textbook example of defective decision making. After the war, the primacy of battle, a feature of the thinking of 19th century historians as much as generals, began to be questioned.

One meme held that some things are unchanging and will always be true. This is a common meme in traditional societies. Some officers in the Sinai were seen taking precautions against weapons like heavy artillery that simply were not there based upon experience on the very different Western Front. Others assumed that victories over the Turks were as inevitable as victories over tribesmen with spears.

Another meme held that human factors like morale were so much more important than mechanistic elements that they could overcome machine guns. This meme was related to the previous one, for when technological factors are constant, it is the human dimension that still provides scope for improvement and this became the main role of regular army officers. Continued focus on human issues led to overestimating their importance and consequently to the notion that repeating an operation unchanged but with more determination could result in a more favourable outcome.

Perhaps the meme that caused the greatest degree of dissonance, however, was the value of courage. Due to the dangerous nature of the battlefield, this had always been a military virtue. But under the prevailing tactical conditions of 1915 and 1916, bravery seemed more likely to get a man killed than anything else.

The tactical problem was as easy to define as it was frustratingly difficult to solve. Defensive fortifications consisted of trench lines and barbed wire; they contained infantry armed with rifles, bayonets and machine guns. No Man's land was also swept by artillery.

Cutting barbed wire was initially the more difficult problem. Both high explosive and shrapnel were tried and both were found to be ineffective with the quantities of ammunition available at Gallipoli. In France, more ammunition was available and cutting was successfully carried out at Pozieres. The German response was to use more wire in front of the Hindenburg Line. Destroying such an obstacle proved a challenge but a new technology became available, the percussion fuze. Spraying shell fragments at ground level, it proved effective at destroying barbed wire. In the later campaigns, tanks were employed against wire with great success, and of course, the infantry could cut their way through the wire if enemy artillery and machine guns were suppressed.

The gunners at Gallipoli knew that if they could obtain a good firing position, they could damage trenches with high explosive. This proved hardest at Gallipoli; in the broader, flatter terrain of France, firing positions were easier to find but in the Noreuil Valley, at Passchendaele and at Dernancourt, the gunners still had to cope with less than perfect sites. Armed with plenty of high explosive, they were able to destroy the enemy trench systems, reducing the area to a cratered, lunar landscape in the process.

The German response to this was the construction of deep, shellproof dugouts. While they prevented destruction of the infantry, the Germans inside could not fight from their dugouts; they had no acquisition. At Fromelles, a weak barrage allowed them to emerge during the barrage and even fire through it. The old Anglo-Saxon meme of "more is better" soon took care of this. At Pozieres, it then became a race between the attacking diggers and the defenders to see who could occupy the trenches first when the barrage lifted. A good barrage could be followed closely and the diggers generally won, using Mills bombs and P bombs to clear out the defenders, whose shelters then became death traps.

Throughout 1917, the artillery refined its methods. The new field artillery organisation nominally reduced the guns per division from 64 to 48 but in practice each division in the line normally had the field artillery of two divisions or the equivalent assigned. New technics were introduced. The very concept of a barrage was a new meme, the word barrage, borrowed from the French, meaning "barrier". A simple technic of firing on one place and moving forward by "lifts" was used at Pozieres. At Bullecourt, the 2nd Division was provided with a "creeping" barrage that moved forward at the rate of 90

yards every 3 minutes. This was further refined during Third Ypres to barrages that changed speed and paused on certain lines at certain times. Protective barrages were added to prevent German counterattacks, as was a searching barrage to suppress German machine guns beyond the objective capable of firing on consolidating diggers. The barrage became so complex that special ladder diagrams were developed to depict it. The firepower of the artillery destroyed all but the deepest shelters and ultimately forced the enemy to pull back and disperse, relying on counterattacks.

The Somme campaign revealed serious logistical difficulties with this massive use of artillery, particularly with respect to the transportation system, but these were regarded as technological and administrative difficulties and so were tackled as such and eventually overcome. The diggers too came under devastating artillery fire at Pozieres and Bullecourt and it was clear that the enemy artillery had to be overcome. The heavy artillery had the range for acquisition of the enemy's field and heavy artillery and counterbattery fire became its main role, with at least half of its guns and howitzers engaged in counterbattery missions. The new technologies of flash spotting, sound ranging and aerial observation were deployed to locate the enemy batteries. The heavy artillery now attempted to neutralise the enemy guns. Increasingly, the German guns were forced to hold fire or move constantly for fear of the heavy artillery. Heavy artillery showed spectacular growth from a pathetic three howitzers at Gallipoli:

Strength of I Anzac Corps / Australian Corps Heavy Artillery  
(1916-1918)<sup>1</sup>

Gun	Pozieres, July 1916	Bullecourt, April 1917	Menin Road, September 1917	Amiens, August 1918
60 pounder	16	12	30	38
6" howitzer	8	20	80	128
6" gun			8	16
8" howitzer	4	16	24	40
9.2" howitzer	4	12	30	24
12" howitzer			4	4
15" howitzer			2	
TOTAL	32	60	178	248

<sup>1</sup> Bean III: *The AIF in France 1916*, p. 652; War Diary, I Anzac Heavy Artillery, AWM26 156/6; War Diary, GOCRA I Anzac Corps, AWM4 13/4; MGRA GHQ, "Artillery Resources of Fourth Army", dated 28 August 1918, AWM 26 468/2

The brief period of semi-open warfare during the German withdrawal to the Hindenburg Line was an opportunity for the development of new tactics. In the trenches, the infantry had come to rely on bombs and the bayonet and ignore the rifle bullet as a weapon, and they had to unlearn this. On the other hand, they now had more firepower at their disposal than ever, the number of Lewis guns per battalion having risen from four in March 1916 to eight in May, twelve in July and sixteen in December.<sup>2</sup> The platoon became the principal tactical unit, with Lewis gunners and bombers under its control. The new organisation had great flexibility and soon showed its value. At the same time, a diamond shaped formation designed to reduce losses from enfilading machine guns and artillery replaced the wave formation. The infantry also developed the technic of jumping off from a tape laid across No Man's Land.

The best time for an attack remained a problem for a surprisingly long time. The dusk attack, as suggested by the *Field Service Regulations*,<sup>3</sup> proved disastrous at Fromelles as it made location easier for the enemy artillery. At Pozieres, the 1st Division attacked at 12:30 am, which allowed for a night approach and attack, but forced a night consolidation as well. At Hamel, 3:10 am was chosen so that there would be enough light for tanks but a night assembly for the infantry.

The low-lying ground on the Flanders sector led to the use of above ground fortifications made from steel and concrete. Initially, they were merely shelters but the technic was refined to produce the pillbox, a miniature fort from which the enemy could fire as well as shelter. Most could withstand hits from all but the heavier guns. Tactics were developed to overcome them, their fire being masked by rifle grenades and Lewis guns until Mills bombs could be thrown through the aperture.

In 1917, bite and hold became the standard operational tactic and set piece battles the norm. Objectives strictly limited to the range of the artillery, which provided firepower both for the attack and for defence against German counterattacks. But the attempt to push through the German front at Third Ypres ground to a halt when a vulnerable salient allowed the German artillery to disrupt a supply system strained to the limit by a technologically generated quagmire and the logistical requirements of the bite and hold tactic.

The German offensives provided a test of a different kind for the AIF: stopping German attacks with forces superior in numbers. This advantage was cancelled by the AIF

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<sup>2</sup> "Notes on Lewis Guns - Tactical Lessons 1915-1918", AWM25 385/15; GS 2nd Division, dated 19 July 1916, AWM26 56/2

<sup>3</sup> *Field Service Regulations*, p. 147

employing superior firepower. Once again, all arms had to adapt to a more fluid form of warfare and there was a general reversion to the 1914 style organisation, with the notable exception of the infantry. The increase in the firepower of the infantry as the battalions became smaller is one of the trends of the war:

Automatic weapons in the infantry division  
(1914 - 1918)

	September 1914	September 1915	September 1916	September 1917	September 1918
Machine guns	24	48	48	64	64
Lewis guns	-	-	104	200	380

The proportion of the infantry battalion's firepower that came from automatic weapons increased from 8 per cent to 64 per cent. In addition to automatic weapons, the infantry had access to other new weapons, such as rifle grenades, hand grenades and mortars, and they continued to carry their rifles and bayonets.

In the thinly held battlefield that was the residue of the German offensives, the AIF developed its own tactics, peaceful penetration, that utilised the technologies available in a new manner and proved every bit as effective as bite and hold and far less costly. The trench warfare produced by the rifle and machine gun at last gave way to a semi-open battlefield dominated by artillery. Along the way, the fact that infantrymen now fought in small, relatively isolated groups gave great scope for the kind of individual initiative that was always a hallmark of the AIF. The value of bravery was restored, the brave man becoming more likely to survive.

At Hamel, an Australian version of bite and hold was developed that combined with armour and aviation technologies and peaceful penetration tactics. At Amiens, this technic was further extended to allow for a deep, if still limited, advance. Employing all technologies in harmony, the Australian Corps then fought its way forward alternatively with battles of manoeuvre, set pieces, and peaceful penetration.

The Sinai and Palestine theatres witnessed a style of modern warfare that was very different from that of the Western Front, one characterised by highly mobile mounted operations rather than static set piece offensives directed at trench lines, although trench warfare conditions did occur for a period at Gaza. Here the nature of the theatre gave scope for mobility and the use of the mounted arm from the beginning. Here too,

aviation, artillery, armoured cars and light horse were used in synergy, maximising the benefits of available technologies.

The conditions of the Great War were no aberration but the result of the circumstances that created them. Trench warfare will recur whenever the circumstances that created it exist. And herein lies perhaps the lesson that the story of technology teaches. Faced with unforeseen technological circumstances, the diggers of the Great War were ultimately able to transcend their circumstances and transform them into victory.

The prospect of tactics, organisation and technology getting out of step is all too likely in an era of rapid technological change. Should this recur, then it will be up to the army to comprehend the situation and respond appropriately. The issue is whether they are any better equipped to do this than their counterparts in the Great War.