Warfare 1914-1918

By William Philpott

Summary

Static “trench warfare” belied a dynamic transformation in warfare between 1914 and 1918. Every army grappled with the same issues: how to end a strategic stalemate occasioned by their ability to draw on huge manpower reserves to refill their ranks; how to operate on an industrialised, technological battlefield supplied by fully-mobilized home fronts; and, tactically, how to overcome fixed defensive systems supported by concentrated firepower. By 1918 attrition emerged as the solution. New forms of operational science changed the nature of command, control and doctrine in “modern” armies and combined-arms tactics developed to allow progress across the fortified battlefield.

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Introduction

The armies of 1918 were structured differently than those of 1914, incorporated new weaponry and operated according to tactical and operational doctrines which had developed

over the course of the war.[1] Although in most theatres, along the notorious western front in particular, armies were still fighting on roughly the same ground that they had occupied since entering the war, the intervening years had seen an unprecedented transformation in the nature, methods and objectives of warfare. Some authors have suggested that this amounted to a veritable "military revolution," one that "combined industrial firepower and logistics with the fighting power and staying power that nationalism could generate."[2] A tactical "revolution in military affairs," arising from the deployment of industrial weapon technologies such as machine guns, heavy artillery, aircraft, tanks and gas on the battlefield underpinned this development.[3] However, this transformation went beyond the tactical and brought about a change in operational systems – command, control, communications and intelligence. Strategic focus shifted from the capture of territory to the attrition of the enemy's army and war-making capacity.

It took three cycles of warfare, three campaigning seasons in pre-modern parlance, to complete this transformation. Basic tactical concepts were tested in 1915. In 1916, "scientific" operational methods were deployed. In 1917 these were inculcated into armies trained and equipped to fight modern "deep" battles.[4] In 1918 armies and their commanders applied these methods to fight the war to a decision. Contrary to much popular and some historians' perception, those who held high military commands were on the whole practical, professional soldiers who grappled with and solved the problems presented by a stalemated, industrial battlefield. The costly consequences of the war were largely a product of the nature of large-scale attrition warfare, rather than a result of failure of leadership or military imagination.

Every army faced the same problem, although with individual challenges. German forces essentially conducted a strategic defensive on the static western front, punctuated with limited offensives. Consequently, German doctrinal developments in that theatre focused on localized fights for ground: adaptive defensive methods, based partly on increasingly deep and elaborate systems of field fortifications, partly on defensive artillery and machine-gun fire, and partly on dynamic infantry counter-attack tactics, resulting in so-called "positional warfare." The eastern front offered the opportunity for large-scale mobile offensives and there offensive tactics based around powerful hurricane artillery bombardments, which would later be employed on other fronts, were trialled.

The French Army was obliged to take the offensive to liberate national soil. Through an iterative experimental process, tactics for fighting on the entrenched battlefield were conceived and tested in 1915. For example, infiltration or "storm troop" infantry tactics – sometimes dubbed "Pétain tactics" after the innovative commander who was to rise to

command of the army by 1917, though often, if erroneously, attributed to the German army – were tested in 1915 and became standard practice in offensive operations thereafter.[5] The other cornerstone of French battlefield tactics was close cooperation between artillery and infantry. From 1916 on this formed the foundation of a new "scientific" operational offensive system that allowed for increasingly effective penetrations into German defences. However, it was not until 1918 that Ferdinand Foch (1851-1929) military genius used these modern operational methods to achieve strategic ends.

The British Citizen Army was handicapped by rapid expansion and a lack of experienced cadres. Its baptism of fire on the Somme on 1 July 1916 was to be notoriously bloody. Historians have identified this as the start of a "learning curve" for the British Army that would culminate in its becoming a very effective fighting force by 1918. Its doctrine of "combined arms" owed a lot to the principles of artillery-infantry cooperation which underpinned all modern battle doctrine. The British Army also effectively integrated new battlefield technologies such as the tank, aircraft and gas, and even the cavalry, a branch that had supposedly already had its day on the industrialized battlefield.[6]

After the bloody shock of its late entry into the war, the Italian Army adapted to the modern battlefield with technologically updated equipment and French and British tutelage.[7] Indeed, shared knowledge and experience facilitated military improvement. On the opposing side, the Austro-Hungarian Army provided a solid defence against the Italians (if not the Russians) with German support and training (as at Caporetto in October 1917).[8]

Russian forces too were handicapped initially by weak leadership and a lack of equipment and training. Those talented commanders who were willing to assimilate the methods being developed by allies and the enemy, such as Aleksei Brusilov (1853-1926), could use their troops effectively, at least if they were adequately supplied with artillery and munitions.[9] Unfortunately for the Russians there were not many Brusilovs and the Russian army was generally outclassed tactically and operationally by the Germans.

The arrival of the American Army on the western front indicated that high morale was no compensation for faulty doctrine. John Pershing (1860-1948) continued belief in the rifle and bayonet as the dominant battlefield weapon had no place on the mechanized battlefield. The French did all they could to take their new ally in hand and, by the last months of the war, the Americans were losing some of their "greenhorn" tendencies.[10] As with the British army before them, however, bloody battles such as that for Belleau Wood might have been avoided with more careful study of the new ways of warfare that had emerged from the

trenches.

1914: An Unexpected Problem?

It is often construed that the armies that went to war in 1914 were met with unanticipated challenges and that tactical and operational doctrine was deficient. Armies had certainly been struggling to adapt to the rapid pace of technological change since the end of the 19th century. The appearance of rapid-fire weapons – magazine rifles, quick-firing field artillery and the machine gun which would become synonymous with warfare between 1914 and 1918 – had caused all to re-examine tactical doctrine. The age-old contest between firepower and shock action on the battlefield would recur, with firepower temporarily proving decisive. All armies had developed tactical systems which tried to integrate artillery fire with infantry action. What became evident from the encounter battles along the frontiers of France and Belgium in August 1914 was that the German tactical system, which used concentrated artillery fire to silence the enemy's guns to enable the infantry to proceed, was superior to the French doctrine which advocated suppressing the enemy's infantry with field-artillery fire to facilitate a decisive infantry attack. The heavy casualties on both sides, however, indicated that artillery and rifle fire would control the battle space, obliging infantrymen to take to trenches for self-protection. The machine gun was relatively scarce at this time, although the German practice of concentrating their fire rather than dispersing their guns added to their ability to control the killing zone between the armies known as "no man's land."

The French learned quickly: "I attack with the greatest prudence, lots of artillery, and as little infantry as possible," divisional commander Marie-Émile Fayolle (1852-1928) noted in his diary at the end of August 1914.[11] This meant that the French were able to meet the German Army on more equal terms during the Battle of the Marne in September which became a gruelling back-and-forth slog as German forces tried to break the French centre. It held, allowing the French and British Armies to turn the enemy's open right flank and push it back to the river Aisne. There the Germans dug in, creating the first static trench front. For the remainder of the 1914 campaign, both sides attempted the standard operational principle of "flanking" during the so-called "race to the sea" but neither could concentrate sufficient force quickly enough to decide the campaign.

Late October and November were therefore spent in a new kind of battle. The First Battle of Ypres was the first properly attritional engagement as German reserves were thrown into the fight, with allied reserves fed in piecemeal to block this attempt to break through to the Channel ports. In this battle, steadiness under fire and old-fashioned courage in the charge held sway, although artillery still controlled the field. All armies were short of munitions after unprecedented expenditure during the war of movement (shell shortages were a feature of

the first year of trench warfare) and it was close-range fights with bullet and bayonet that characterized this battle – for the last time.[12]

While tactics had to and did adapt rapidly, it was at the operational level of war that the combatants' armies were found wanting in 1914. On occasion, old-fashioned manoeuvre (although based on modern railway systems) was effective, as at Tannenberg on the eastern front in August or when Joseph Joffre (1852-1931) concentrated a new French Army around Paris in late August and early September to menace the open German flank. But while strategic manoeuvre could take place at railway speed, operations were conducted at walking pace or more slowly. This was one factor that thwarted the Schlieffen-Moltke manoeuvre against France.[13]

There was a more fundamental problem of operations, however. "How and whether it will be possible to command mass armies, as we have formed them, cannot be known to any man in my opinion," Helmuth von Moltke (1848-1916) mused in 1905.[14] Command and control of resilient mass armies sub-divided into armies, army corps, divisions and brigades was rudimentary in an age with only embryonic wireless communications. The armies might be set on their planned course at the outbreak of war but, sooner or later, hasty decisions would have to be made. The French command system proved more adaptable during 1914 than the much-praised German Great General Staff system. But as Foch had predicted,

The armies have outgrown the brains of the people who direct them. I do not believe that there is any man living big enough to control these millions. They will stumble about, and then sit down helplessly in front of each other thinking only of their means of communication to supply these vast hordes who must eat.[15]

As professor of strategy and tactics at the *École de Guerre* before the war, Foch had recognized and engaged with the problems of higher-level operational command without arriving at any practicable solution. Foch would wrestle thereafter with adapting tactics and operations to the entrenched battlefield.

1915: The Tactics of the Trenches

When the 1915 campaigning season commenced, armies faced a new challenge: trench warfare. They approached it with naive expectations – that it was a temporary phenomenon and an offensive strategy would "break through" the defensive lines and restore movement to the battlefield – but also with professionalism. Armies engaged with and sought solutions to the tactical and operations problems of what the Germans defined as "positional warfare" which was essentially siege warfare adapted to the technologies and productivity of

industrialisation. Tactically this involved fighting within the trench systems that became increasingly deep and elaborate as the war went on (in a tit-for-tat evolutionary dynamic as tactical and operational methods that allowed more effective penetration into such fixed field fortifications developed). Operational stalemate persisted because the slower-than-walking pace of battle was too sluggish relative to the ability to reinforce threatened sectors of the front at railway or marching speed. (Russia's lack of railways allowed Germany more operational flexibility on the eastern front, although the vast space of Russia negated any localized battlefield success.) The same problem arose during the Battle of Gallipoli where sea-power proved unable to overwhelm land forces and on the Italian front where the mountainous terrain reinforced the defensive capability of the outnumbered Austro-Hungarian forces.

Faced with stalemate on all fronts, rather than shattering the enemy's defences, the elimination of his reserves became the Clausewitzian "centre of gravity" of military operations. At the tactical level the objective was the companies and battalions held ready to counter-attack any offensive; at the operational level it was the Divisions and Army Corps kept in hand to reinforce threatened sectors; and at the strategic level the intention was to use up the un-deployed manpower reserves which could sustain or swell an army's ranks year-on-year. Inexorably, warfare became a process of attrition, even as armies were evolving into modern, technologically sophisticated forces using tactics appropriate for an industrialized battlefield.

Tactical Systems Emerge

The battles of 1915, although overambitious and largely ineffective, were not sterile. The basic principles of "combined-arms warfare" and the integration of technologies into tactical-operational systems which would allow an attacker a reasonable prospect of mastering defensive firepower emerged from this trial. The well-armed infantryman able to operate with fire-and-movement tactics under the cover of protective artillery fire made his appearance on the battlefield (even if cooperation between arms, command and control were rudimentary).

The gunners, increasingly the mainstay of the "modern style of warfare,"[16] were developing appropriate techniques and munitions for their function as the infantry's protector. Airmen cultivated their role as the eyes of the advancing troops (along with the overlooked but very important tethered balloons), able to peer over hills and behind enemy lines. Systems to command the larger formations (multi-division army corps with attached formations and multi-corps armies) and to integrate supporting weapons were formulated to manage the growing complexity and extended duration of battle. All this was, however, hampered by a general shortage of weapons and munitions, which, since battle was becoming more technical and material-intensive, would be the principal constraint on successful offensive

operations well into 1916.

The winter of 1914-1915 was characterized by localized offensives in Artois and Champagne which furnished lessons on what was not effective. Close-quarter fighting for isolated but strategically important positions such as the hill of Notre Dame de Lorette where thousands of French infantrymen fell during the winter epitomized the “trench” style of fighting: back-and-forth struggles with attack and counter-attack using bayonets and grenades did little more than run up the butcher’s bill. Artillery support was limited and hard to target effectively when the opposing front lines were close together. At least for the first large-scale set-piece battle planned for 1915 such lessons as could be learned from trench fighting had been codified into new doctrine. *Grand Quartier Général’s* note 5779, “Goal and Conditions for a General Offensive Action” (April 1915) established broad principles for artillery-infantry cooperation in an offensive and for the organization of the supporting artillery barrage.[17] The Moroccan Division’s spectacular push onto the Vimy Ridge when the offensive opened on 9 May attested to their fundamental correctness; although the other attacking army corps had relatively meagre success against stronger German defensive positions to the flanks, and the Moroccan Division, isolated and attacked from three sides, was ultimately pushed back. Command and control had proven inadequate. Thereafter the need to mount steady, systematic attacks that remained under effective command and within the capabilities of the attacking force vied with smashing attacks that relied on *élan vital* as the way to succeed in an offensive. What was obvious, however, was that the momentum of the first rush could not be sustained against a consolidating defence. Attacking the village of Neuve-Chapelle in March, for example, the British had seized their first objective after a surprise thirty-five minute hurricane bombardment but suffered heavy casualties thereafter while trying to exploit this success without proper artillery support against a defended German second line.[18]

1915’s early battles also demonstrated that the application of science and industry to the battlefield would revolutionize warfare. The German Army used poison gas (chlorine in the first instance) on the battlefield at Ypres in April. Its tactical effect, though striking, was not decisive. The allies responded quickly in kind: the French Army used gas shells for the first time during the Artois offensive in June[19] and the British employed chlorine gas released from fixed cylinders in their Loos offensive in September. As the war progressed novel, increasingly toxic gases would be developed by the industries of both sides and munitions systems for their effective delivery improved. Counter-gas measures – gas-masks in particular – developed apace.

If gas was the most notorious of the new weapons of the industrial battlefield, many other scientific processes – explosives, ballistics, sonics, optics, photography, telegraphy,

meteorology – similarly underwent development and integration into the competing tactical systems of 1915. The war's principal mechanical novelty, the armoured, caterpillar-tracked "tank," was also conceived (by British and French military engineers separately) as the early trench stalemate set in. Nevertheless, it was to be more than a year before this slow, cumbersome gun-platform made its debut on the battlefield and another year before it started to be used effectively in large numbers. If tactical systems adapted to integrate new technologies, throughout the war they remained based on combined-arms principles identified in 1915, essentially using artillery fire to protect and move the infantry. Philippe Pétain (1856-1951) tactical mantra, "the artillery conquers, the infantry occupies," summed up the basis of effective offensive tactics on the modern battlefield.

The artillery barrage, which developed and adapted as the war went on, was central to tactical-operational systems. What effective artillery fire could achieve was demonstrated by the German Army on the eastern front in their May offensive at the Battle of Gorlice-Tarnów. A short but intensive preliminary bombardment broke the enemy's defences before the German and Austro-Hungarian infantry followed up, overwhelming the Russian 3rd Army. Against a relatively weak and undeveloped defensive system a powerful but relatively short paralyzing bombardment could be decisive. In the west, where defences were more solid (or heavy guns in short supply) a more systematic barrage, intended to destroy enemy defensive positions before the infantry attacked, was favoured. Though ponderous, methodical destructive fire with its effects carefully monitored from the air removed many of the threats – particularly machine-gun posts and uncut wire – that in early battles checked the infantry attack. However, the infantry still needed close protection, for which a "rolling" or "creeping" barrage that swept ahead of the assaulting infantry was conceptualized and developed as warfare evolved.

Even then the infantry needed firepower. Portable light machine guns such as the British Lewis gun, trench cannons such as the French 37mm, and short-range "artillery" (trench mortars and rifle grenades) appeared on the battlefield during 1915. These were incorporated into the infantry's arsenal, allowing it to tackle un-silenced enemy strong points with some hope of success. As the later battles of 1915 demonstrated, with sufficient munitions and skilled infantry, the enemy's front-line defences could be captured with acceptable losses. Whether they could be held against enemy counter-attacks was another matter. In particular, silencing the enemy's artillery with counter-battery fire had not yet proved effective. Any infantry that won its objectives would have to endure a heavy counter-barrage and counter-attacks which often caused greater losses than the attack itself.

Operational False Starts

The real weaknesses of 1915's warfare lay at the operational level, in command and control and in setting appropriate battlefield and strategic objectives. Translating tactical success into strategic victory proved impossible. Even stunning offensives, such as at Gorlice-Tarnow which destroyed a whole Russian Army and forced a general Russian retreat, did not redress the wider strategic stalemate. In 1915 commanders had operational ambitions that were beyond the capabilities of their forces and their field commanders.

Joffre and others expected trench warfare to be a temporary phenomenon. Early localised successes such as the Moroccan Division's thrust onto Vimy Ridge and the British seizure of Neuve Chapelle or the collapse of the Anglo-French line north of Ypres after gas was used for the first time, hinted that this was not a false hope.

The enemy's defensive response to offensive penetrations, to deepen their positions by building successive lines of defence, would make a breakthrough all the harder. Yet it was the operational objective of the autumn 1915 western front offensive. At both Loos and in Champagne on 25 September, British and French assaults penetrated the enemy's forward defensive positions in several places, though not everywhere. Carnage ensued on subsequent days when fresh reserves were pushed through these gaps against the enemy's second position with inadequate artillery support.

Despite these setbacks, "break though" – a single, dynamic thrust in force through the enemy's successive lines of defence before their reserves could be deployed to contain it (with the ultimate hope of exploiting the advance with rapidly moving cavalry divisions) – did not immediately disappear from the operational lexicon. Some, however, came to realize that a steady, methodical battle could be more productive than a dynamic one in the existing tactical circumstances and might produce strategic results through steady attrition. For example, in September and October during the Third Battle of Artois, Foch employed successive limited, well-supported offensive thrusts to advance French lines towards the crest of the Vimy Ridge. If they did not get there before the offensive halted, at least, he concluded:

Against certain particularly strong positions…persistent actions, sustained until the enemy's will is broken, ought to succeed. Not requiring large numbers of infantry, they are above all costly in artillery munitions; all the same such a form of attack should not be rejected. They should find a place in our methods.[20]

Shells rather than men were being used to take and hold ground. Foch had realized that the battle was now being fought within the enemy's defences not beyond them. It was there that

the enemy's reserves had to be engaged and defeated. To do so required careful management of resources, integration of artillery, infantry and air assets and, above all, effective command and control during battle. A new operational doctrine appropriate to the circumstance of trench warfare which Foch dubbed "scientific battle" was in place for 1916's gruelling battles.

1916: Attritional Operations

The armies of 1916 were inconsistent in applying the lessons learned in 1915. Further experience was to produce vital modifications in technique. The battles of that year confirmed that taking on and defeating the enemy in his defensive positions was possible, but ending "positional warfare" was not. Each army utilized the methods trialled in 1915, but operations remained subject to logistical constraints. With home fronts fully mobilized, however, material restrictions were coming to an end and guns and munitions were available in adequate, if not yet ample, amounts. This meant that 1916's battles would be relatively localized, prolonged and attritional. At Verdun and on the Somme in France, and beyond the river Isonzo in Italy, the allied armies took on their opponents in sustained, grinding battles. In the east there was more space in which to manoeuvre, but there too the major offensive, by Brusilov's Armies from June to September, resembled those taking place in the west.

Verdun

1916's longest battle, if not its bloodiest, took place around the French fortress of Verdun from February to December. The battle had two phases: the German offensive until July and the French counter-offensive thereafter during which a significant proportion of the lost ground was recaptured. Topped and tailed by the large-scale attacks of Wilhelm, Crown Prince of Germany (1882-1951) 5th Army in February and March and Robert Nivelle (1856-1924) 2nd Army in October and December, the texture of the battle was intense, localised struggles for strategic high ground and key positions – Fort Douaumont, Mort Homme, Côte 304, Fort Vaux, Thiaumont, Fleury – that sucked in the infantry reserves of both sides, under the unceasing rain of artillery projectiles. The front-line infantry, one *poilu* mordantly remarked, was "to act as standard bearers marking the zone of superiority established by the artillery."[21]

The opening blow, which utilised the smashing artillery techniques developed by the German Army on the eastern front in combination with infantry infiltration tactics, was spectacular. The French front line was overwhelmed and within a week Fort Douaumont had been taken by surprise. Yet thereafter, as the French defence was reinforced and logistics sorted out, the French line stabilised. When the attack was renewed in March against the heights of Mort

Homme and Côte 304 on which the French had concentrated their artillery, the opening blow, while still potent, failed to sweep the defence away. Thereafter an attritional struggle persisted into May. Whether the Crown Prince was actually trying to break through to Verdun itself remains a point of contention. Erich von Falkenhayn (1861-1922) certainly characterised Verdun as a purely attritional battle intended to bleed the French army white.[22] Its course demonstrated once again the impossibility of breaking through into open country. When Nivelle finished the battle with two powerful counter-attacks which liberated forts Douaumont and Vaux he set strictly limited, achievable objectives, well within artillery range. Although Nivelle subsequently claimed to have discovered the way to fight offensive battle effectively, in truth the French army had been doing this for some months already. Émile Fayolle, who had commanded the French 6th Army in the Somme offensive, commented tartly that Nivelle's success was "a consequence of the Somme offensive, [and] the result of the methods used on the Somme reconfigured."[23]

The Somme Offensive: Learning the Way

If one army still had to master the correct way to fight on the industrialised battlefield it was the British. The British Army had expanded more than tenfold since 1914 with a concomitant dilution of skill. Commanders were rapidly promoted and inexperienced while volunteers in the ranks were eager but only partly trained. This was compounded by the failure to take away useful lessons from 1915. Joffre identified the heart of the problem on 2 July 1916, the day after the notorious first day of the Somme on which the British army suffered 57,000 casualties with nearly 20,000 killed: "The reasons for this reverse are to be found in the poor artillery preparation, and in the fact that they did not mop-up the enemy trenches passed by the first waves…the English do not yet have 'the way.'"[24]

The barrage fired on 1 July 1916 had been spread too thinly. In planning the attack, Douglas Haig (1861-1928) and the responsible army commander, Henry Rawlinson (1865-1924), had disagreed on the nature and objectives of the first assault. Haig had favoured a hurricane bombardment and a dynamic assault in the hope of overwhelming the successive German defensive positions before operational reserves could be deployed (a lesson learned from Loos). Rawlinson favoured a systematic approach: a multi-day preliminary bombardment and a series of set-piece attacks on the German defensive positions (a lesson learned from the French). Although French intentions obliged a steady, carefully-monitored bombardment, Haig's ambitious objectives were retained, effectively ensuring that the artillery support, although in prodigious quantities compared with 1915's battles, remained inadequate. In both British and French attacks the focus of the bombardment remained the destruction of the enemy's defences (wire-cutting and the elimination of strong points) rather than the

neutralisation of the enemy's ability to react with counter-battery and interdiction fire (cutting off lines of communication).[25]

With the lessons of 1915 under his belt, Fayolle approached planning for the Somme somewhat differently. He expected "a battle of a month or more which must be continued without a break, the artillery always firing, the infantry always moving forwards."[26] Thus he adopted a systematic, attritional method that would move his divisions forwards under a devastating curtain of artillery fire. This meant that 6th Army captured all of its objectives on 1 July 1916 with 1,590 casualties. They then followed up through the German second defensive position south of the river onto the Flaucourt plateau between 2 and 4 July. Through July and August, they made steady progress through successive German defensive lines north of the river. At the same time, the British attack to the north bogged down in attritional struggles for individual villages.[27]

The British improved quickly. The 4th Army's attack on the German second position on 14 July was much more successful. Under the cover of darkness and with a sufficiently heavy supporting bombardment, the German lines were carried at first light, although command and control weaknesses prevented effective exploitation during the day. When cavalry were belatedly deployed in the afternoon, they failed to secure High Wood, a tactical feature which would delay the British advance for the next two months.[28]

What the Somme offensive did confirm was that distant operational objectives were unrealistic and, conversely, that an objective within artillery range was likely to be secured if the supporting barrage was powerful enough. The enemy, if destabilised by a carefully prepared and powerful allied attack, could always react faster than the disorganised attacker could exploit, reinforcing or counter-attacking threatened points thereby imposing a close-range attritional fight (known as *grignotage*, or "nibbling") on the attackers. Even with the tank, which made its battlefield debut in an infantry-support role in the Battle of Flers-Courcelette on 15 September, the same dynamic was maintained. By default, the objective of the battle became, crudely, to "kill Germans."[29] This at least aligned with the strategic purpose of 1916's campaign, "the destruction of the German and Austrian armies."[30] Foch, who had been tasked by Joffre with coordinating the battle, brought the German defence to a crisis point during September. A series of successive blows by the four French and British Armies now engaged accelerated the rate of attrition of the enemy while advancing the allied line at a faster pace. But the "breakthroughs" which were achieved during this phase – at Bouchavesnes on 12 September and at Flers on 15 September – were of only local tactical

significance. Even if reserves could have been moved forwards quickly enough, these breaches were too narrow to be exploited properly and could be closed by enemy flanking fire.[31] If the line could be broken on occasion, the "rupture" that Joffre anticipated would reinstate a war of movement never occurred. German reserves, while depleted, were never quite exhausted. Their strategic withdrawal to the Hindenburg Line in spring 1917 to liberate reserves to sustain another attritional campaign attests, nevertheless, to the effectiveness of the allies' 1916 strategy of attrition.

Logistics and Other Lessons

The logistics of industrialised battle imposed such constraints on the attack that, had the defence collapsed, open warfare would have been difficult. The vast amount of munitions and men deployed for an offensive relied on complex railway networks for delivery and intricate staff work to get them there and to plan their use. Armies were becoming vast, managerial bureaucracies sustained by paperwork: the telephone, typewriter and copying machine are the unrecognised weapons of modern warfare. Once "set-piece" battles had been planned, supplied and engaged, operations took place at such a slow speed that defensive reserves could be deployed faster than assault troops could get forwards, especially over the shell-churned and often waterlogged ground that resulted from such intensive battles. Not until short-term neutralisation replaced destruction as the objective of a bombardment would the ground be left in such a state that troops and vehicles could make steady progress.

Logistic networks had to be strengthened. That of the British Army behind the Somme front had all but collapsed by September.[32] A mixture of light railways to carry heavy munitions directly to gun positions and road-trains of trucks, which increasingly replaced horse-drawn transport on the lines of communications, became the mainstay of offensive and defensive battles. The best known of these logistical systems, the mythologised *voie sacrée* road and railway corridor that sustained the French army during the Battle of Verdun,[33] suggested that efficient supply to the battlefield was becoming as significant for success as tactics. Over the course of the war, the ratio of "teeth" to "tail" formations in all armed forces shifted towards the latter as infantry support and logistics became the mainstay of modern technological armies.

Although ultimately ending in another stalemate, the Somme offensive was far from sterile. As Foch summed it up afterwards, it had been "a battle which worked, always victorious, beating the Germans, pushing them back. We should continue in this vein as far as we can, denying them any freedom of action and opportunity, continue to beat them."[34] Foch for one took away an understanding of the effectiveness of sustained attritional pressure and

coordinated, sequential blows that would underpin the operational system he would employ to defeat the German Army in 1918.

On other fronts similar lessons were learned and adapted. Brusilov, whose staff studied western front methods carefully, brought off a stunning success against the Austro-Hungarian Army in the first phase of his summer offensive. After German reinforcement, the eastern front campaign inevitably reverted to one of attrition.[35]

In Italy, Luigi Cadorna (1850-1928) armies also delivered much more effective strikes against the Austro-Hungarian Army, such as at the sixth battle of the Isonzo in August during which Gorizia was captured. As the enemy was able to retreat to the next line of hills and dig in once more, the southern front too became locked into a cycle of mutual attrition.[36] Germany's lightning campaign against the Romanian Army after it joined the war in September 1916 indicated that the old style of mobile warfare was not entirely redundant: at least where there was room to manoeuvre against flanks and the enemy was outclassed.[37] Edmund Allenby (1861-1936) would demonstrate the same in Palestine in 1917 and 1918. But "killing Germans" (ideally at a rate at which they could not be replaced) had become the rationale of the middle, attritional phase of the war. Now that home fronts were fully mobilised to support the field armies, battles had become huge mechanical affairs into which men were fed as consumable parts. The German term, *Materialschlacht* (battle of material) was apt, while the *poilus'* nickname for Verdun, "the Meuse mill," attested to the churning, enduring horror of this style of warfare.

1917: Steady Progress

With ample resources, appropriate doctrine, better trained troops and increasing tempo, the allies' operations during 1917 and particularly 1918 were more dynamic and effective than those of the first two years of positional warfare. Yet, in response, the defence continued to thicken and deepen, sustaining the dynamic equilibrium that prolonged stalemate. The method for operating on the entrenched battlefield was established and effective by 1916. Fayolle, one of the best operational commanders of the war, characterised it thus:

Move from objective to objective, without compromising the élan of the men, at the same time leaving nothing to chance. Each attack will therefore be against a fixed objective, of limited width and depth, always preceded by an artillery preparation.[38]

Spring Disappointments

That the first campaign of 1917 did not achieve more was largely because unviable

operational concepts died hard. When Nivelle replaced Joffre in December 1916 he revived the idea of "breakthrough," reasoning erroneously that the tactics he employed so effectively at Verdun could be scaled up to strategic effect. His subordinates, Philippe Pétain (1856-1951) included, considered his plan overambitious, particularly after the German spring withdrawal forced a reduction in its scope. The French attack, supported by tanks for the first time, broke into the first German defensive position as was now customary. However, like the 1915 Champagne offensive, it failed to carry the reinforced second position and another sterile battle of attrition ensued along the *Chemin des Dames*. A reversion to *grignotage* temporarily broke the *poilus'* resolve to fight on. Pétain took the army in hand and, over the summer trained it thoroughly in the most modern and effective tactical methods. Thereafter it would fight with restored confidence in its commanders and ability to master the enemy.

After its early errors, the British Army showed increasing operational effectiveness. Lessons learned on the Somme were refined into new doctrine over the winter. The Battle of Arras, the British army's contribution to the spring offensive, started well. The 1st Army stormed the Vimy Ridge at last and, further south along the river Scarpe, the 3rd Army broke into the German first position. Thereafter the 3rd and 5th Armies struggled to gain a foothold in the second German position against an alert and reinforced defence. It became another attritional fight, notoriously around the village of Bullecourt, the so-called "blood tub."[39]

Summer Victories: "Bite and Hold" Tactics

Haig and Pétain agreed thereafter to revert to a strategy of attrition pending reinforcement with American manpower and even more war material. Yet the summer and autumn of 1917 were not without victories. Both allied armies had developed operational systems that allowed the infantry, advancing under an overwhelming curtain of fire-support, to seize sectors of the enemy's defences. So called "bite and hold" operations seized the Messines Ridge in June and Mort Homme and Côte 304 in August. 1917 is, however, better remembered for the Third Battle of Ypres. This proved another slogging attritional fight as, between July and October, British Empire forces crawled towards the village of Passchendaele, an objective of the first phase of a multi-stage offensive that Haig conceived to break out of the Ypres salient and liberate the Belgian coast. Once again operational ambition seemed out of alignment with tactical capability (although bad weather did come to the Germans' assistance). The further attrition of the German army, another of Haig's objectives, was achieved, but the fight cost his own army dearly too.[40] Given what the year's other battles had shown was possible, the persistence in this advance comes across as

misguided, especially when 1916-style logistic and operational problems re-emerged after torrential rain turned the battlefield into a swamp.[41]

The third battle of Ypres contrasts with the successes elsewhere, such as the Battle of Malmaison in late October which kicked the German army off the *Chemin des Dames* ridge within a few days. In Cyril Falls' judgement this was "the perfect offensive."[42] The French army employed its most intensive artillery bombardment to date, stunning the German defence, while the infantry advanced closely supported by tanks. The battle's objectives – strictly limited in depth to avoid lapsing into *grignotage* – were all secured during the first day and exploitation forwards and laterally won control of the rest of the ridge with little hard fighting.

The Germans too had mastered the tactics needed to break the enemy's front. After the British Army tried out novel combined-arms offensive methods in the Battle of Cambrai in November – to some initial success, with artillery, infantry, tanks, aircraft and cavalry all finding a role in the battle plan[43] – the Germans counterattacked dynamically using a powerful hurricane bombardment and infantry infiltration tactics, winning back much of the lost ground. In Italy, in October, the Austro-Hungarian army, trained and reinforced by its German allies, smashed the front of the Italian 2nd Army in the Battle of Caporetto. Despite precipitating a retreat of the whole Italian line, the offensive as a whole provided further proof that the defeat of one enemy Army could not be definitive. The enemy's whole force needed to be destroyed. While the attack was more dynamic than anything it had managed before, the Austrian Army inevitably ran out of momentum as Italian reserves were redeployed to meet it.[44]

1918: Dynamic Modern Warfare

The 1918 western front campaign was much more fluid than that of previous years, with well-equipped armies trained in modern methods trading blow for powerful blow in a fight to the finish. Rather than being confined to one small section, 1918's battles would ripple along the whole western front. The German Army showed that, as at Caporetto, it could inflict powerful smashing blows which would destabilise the enemy's defensive system. But this could not prevent the inherent dynamic of positional warfare re-imposing itself, with each of Erich Ludendorff (1865-1937) five spring offensives eventually being contained by allied reinforcements redeployed by rail. Foch's "hundred days" counter-offensive proved rather different and innovative. For the first time individual battles were coordinated in a way that would allow them cumulatively to push back and destroy the enemy. Modern "operational art," attuned to the capabilities of armies and the tempo of positional warfare, emerged.

The German Spring Offensives: Persistence without Purpose

Although the German spring offensives were tactically effective, it is acknowledged that Ludendorff lacked any clear operational rationale for the series of battles he fought from March to June 1918.[45] The methods developed in the east and trialled in Italy enabled the German army to deliver a series of blows of unprecedented effectiveness. However, it should be recognised that their potency lay partly in their scale, with more divisions committed to an individual attack than at any time since early 1914. Short, overwhelming hurricane bombardments paralysed the defence long enough for highly trained infantry divisions – "Stormtroops" – to infiltrate what had now becomes strongpoint-based defensive networks and overwhelm a neutralised adversary.

This did not mean that there was no defence. Attackers would have to fight through the enemy's "defence in depth" positions for several days before reaching open country. Only when modern defensive precepts were rejected, as the French 6th Army did on the *Chemin des Dames*, would the defence collapse rapidly and entirely.[46] By the end of the spring offensive cycle the French were wise to the nature of German offensive methods, able to absorb the initial blow with a flexible defence and then to counterattack vigorously, as in the Battle of the Matz in June.[47]

The "Hundred Days" Offensive: The Modern Way of War

The allied counter-offensive began in July with one such surprise attack against the flank of the Marne salient. The Second Battle of the Marne was perhaps as decisive as the first, demonstrating as it did that the allied armies could fight in unison and that the extended German lines were now vulnerable.[48] Having regained the initiative, Foch (who had been appointed allied Generalissimo in March) set about coordinating a series of blows along the western front that cumulatively would destroy the fighting power of the German army, while liberating occupied France and Belgium. The operational art that underpinned Foch's *bataille générale* owed much to previous experience. Allied forces could seize sectors of the enemy's defences without too much difficulty, although exploiting forwards lost momentum and allowed the enemy to reinforce and counterattack. This Foch understood: it had allowed him to contain Ludendorff's spring offensives.[49] Instead, allied battles (each an effective blow on the scale of a 1917-style "bite and hold" offensive but more rapid in tempo as modern combined-arms doctrine was applied) would follow one after the other. The first blow, the Amiens-Montdidier offensive from 8-11 August, initiated a series of limited operations that destabilised the German front, obliging the enemy to retire to their pre-March Hindenburg

Line defences. The second phase of Foch's offensive involved seizing this line with blows struck along the whole western front. The general offensive began at the two ends of the front, with a Franco-American Army Group attacking in the Meuse-Argonne on 26 September, the British attacking toward Cambrai the next day, and a Franco-British-Belgian Army Group attacking in Flanders on 28 September. The decisive blow against the Hindenburg Line was struck in the centre by British and French Armies on 29 September. This complex defensive system (state of the art when built in 1916) was taken within a week. Phase three was a follow-up pursuit, with each improvised German line of defence being overwhelmed in turn. All the while German resources were exhausted, such that there were only two fresh enemy divisions in reserve behind the western front by the time the armistice was signed.[50]

Although this was not "manoeuvre warfare" in the modern sense – Foch pushed back, rather than broke through, the enemy's lines – it amounted to mobile warfare within the parameters of what was practicable with early 20th century armies and logistics. Operational art would develop between the wars as the internal-combustion engine and radio telephony gave its techniques momentum and flexibility.[51] Nonetheless, 1918's warfare demonstrates all the features of modern war.

William Philpott, King's College London

Notes

1. This article focuses mostly on the evolution of attritional trench warfare on the Western Front. More information on Warfare 1914-1918 (Russian Empire), Warfare 1914-1918 (East Central Europe), Warfare 1914-1918 (South East Europe), Warfare 1914-1918 (Ottoman Empire) and Colonial Warfare and Occupation (Africa) can be found in the respective regional thematic articles. ↑
2. Murray, Williamson / Knox, MacGregor: Thinking about Revolutions in Warfare, in Knox, MacGregor / Murray, Williamson (eds.): The Dynamics of Military Revolution, 1300–2050, Cambridge 2001, p. 10. ↑
3. Bailey, Jonathan: The First World War and the Birth of Modern Warfare, in in Knox, MacGregor / Murray, Williamson (eds.): The Dynamics of Military Revolution, 1300–2050, Cambridge 2001, pp. 132-53. ↑
4. Ibid. p. 133. ↑
5. Krause, Jonathan: Early Trench Tactics in the French Army: The Second Battle of Artois, May-June 1915, Farnham 2013, pp. 4-6. ↑
6. Griffith, Paddy: Battle Tactics of the Western Front: the British Army's Art of Attack, 1916-18, London 1994; Boff, Jonathan: Winning and Losing on the Western Front: The

British Third Army and the Defeat of Germany in 1918, Cambridge 2012; Kenyon, David: Horsemen in No Man's Land: British Cavalry and Trench Warfare, 1914-18, Barnsley 2011. ↑

7. Thompson, Mark: The White War: Life and Death on the Italian Front, 1915-1919, London 2008. ↑
8. Morselli, Mario: Caporetto 1917: Victory or Defeat? London 2001. ↑
9. Dowling, Timothy: The Brusilov Offensive, Bloomington 2008. ↑
10. Grotelueschen, Mark: The AEF Way of War: The American Army and Combat in World War 1, Cambridge 2007; Trask, David: The AEF and Coalition Warmaking, 1917-18, Lawrence 1993. ↑
11. Fayolle diary, 30 August 1914, in Contamine, Henry (ed.): Maréchal Fayolle: Cahiers Secrets de la Grande Guerre, Paris 1964, p. 27. ↑
12. Beckett, Ian: Ypres: The First Battle, 1914, Harlow 2006. ↑
13. Herwig, Holger: The Marne,1914: The Opening of World War I and the Battle that Changed the World, New York 2009. ↑
14. Moltke to his wife, 29 Janaury 1915, quoted in: Foley, Robert: German Strategy and the Path to Verdun: Erich von Falkenhayn and the Development of Attrition, 1870-1916, Cambridge 2005, p. 73. ↑
15. Quoted in Seeley, John: Adventure, London 1930, p. 150. ↑
16. Bailey, The Birth of Modern Warfare 2001, passim. ↑
17. Krause, Early Trench Tactics 2013, pp. 23-31. ↑
18. Prior, Robin / Wilson, Trevor: Command on the Western Front: The Military Career of Sir Henry Rawlinson, 1914–1918, Oxford 1992, pp. 44-73 passim. ↑
19. Krause, Early Trench Tactics 2013, pp. 134-5. ↑
20. Foch to Joffre, 6 November 1915, in: Les Armées Françaises dans la Grande Guerre, tome III: Les Offensivese de 1915 – l'Hiver du 1915-16, Paris 1926, annexes vol. 4, annexe 3056, 206-13: p. 211. ↑
21. Lt. Raymond Jubet, quoted in: Strachan, Hew: The First World War: A New Illustrated History, London 2003, p. 185. ↑
22. Foley, German Strategy 2005, pp. 187-97. ↑
23. Fayolle diary, 8 January 1917, in Contamine, Cahiers Secrets 1964, pp. 197-8. ↑
24. Joffre Journal, 2 July 1916, in Pedroncini, Guy: Journal de Marche de Joffre (1916–1919), Vincennes 1990, p. 30. ↑
25. Philpott, William: Bloody Victory: The Sacrifice on the Somme and the Making of the Twentieth Century, London 2009, pp. 106-10 and 117-21. ↑
26. Fayolle diary, 14 March 1916, in Contamine, Cahiers Secrets 1964, p. 152. ↑
27. Philpott, Bloody Victory 2009, pp. 113–6 and 183-282 passim. ↑

28. Ibid., pp. 237-41. ↑
29. 6 July 1916, Repington, Charles à Court: The First World War: Personal Expereince, volume i, London 1920, p. 257. ↑
30. The National Archives, Kew, WO 106/1454. Plan of Action Proposed by France to the Coalition, in: Written Statement of the Conference Held at Chantilly, 6 December 1915, appendix 2. ↑
31. Philpott, Bloody Victory 2009, pp. 345-84 passim. ↑
32. Brown, Ian Malclom: British Logistics on the Western Front, 1914–1919, Westport 1998, pp. 122-34. ↑
33. Ousby, Ian: The Road to Verdun, London 2002. ↑
34. Weygand papers, Service Historique de la Defense, Armée de Terre, Vincennes, 1K130/9/6. Note by Foch, 3 November 1916. ↑
35. Dowling, The Brusilov Offensive 2008. ↑
36. Thompson, The White War 2008, pp. 169-77. ↑
37. Torrey, Glenn: The Romanian Battlefront in World War I. Lawrence 2012. ↑
38. Fayolle to Foch, 5 June 1916, in: Les Armées Françaises dans la Grande Guerre, tome IV: Verdun et la Somme, volume ii, annexes vol. i, annexe 944, 1274–7, Paris 1933, p. 1277. ↑
39. Walker, Jonathan: The Blood Tub: General Gough and the Battle of Bullecourt, 1917, Staplehurst 2008. ↑
40. Prior, Robin / Wilson, Trevor: Passcehdaele: The Untold Story, New Haven 1996. ↑
41. Macdonald, Andrew: Passchendaele: Anatomy of a Tragedy, Auckland 2013. ↑
42. Falls, Cyril: The First World War, London 1960, p. 285. ↑
43. Hammond, Bryn: Cambrai, 1917: The Myth of the First Great Tank Battle, London 2008. ↑
44. Morselli, Caporetto 1917, 2001 passim. ↑
45. Zabecki, David: The German 1918 Offensives: A Case Study in the Operational Level of War, Abingdon 2006. ↑
46. Ibid, pp. 214-9. ↑
47. Ibid, pp. 237-42. ↑
48. Neiberg, Michael: The Second Battle of the Marne, Bloomington 2008. ↑
49. Aston, George: The Biography of the Late Marshal Foch, London 1929, p. 226. ↑
50. Philpott, Bloody Victory 2009, pp. 530-2. ↑
51. Citino, Robert: Blitzkrieg to Desert Storm: The Evolution of Operational Warfare, Lawrence 2004. ↑

Selected Bibliography

- Boff, Jonathan: **Winning and losing on the Western Front. The British Third Army and the defeat of Germany in 1918**, Cambridge; New York, 2012: Cambridge University Press.
- Brown, Ian M.: **British logistics on the Western Front, 1914-1919**, Westport, 1998: Praeger.
- Dowling, Timothy C.: **The Brusilov offensive**, Bloomington, 2008: Indiana University Press.
- Foley, Robert: **German strategy and the path to Verdun. Erich von Falkenhayn and the development of attrition, 1870-1916**, Cambridge; New York, 2005: Cambridge University Press.
- Griffith, Paddy: **Battle tactics of the Western Front. The British Army's art of attack, 1916-18**, New Haven, 1994: Yale University Press.
- Krause, Jonathan: **Early trench tactics in the French Army. The Second Battle of Artois, May-June 1915**, Farnham, 2013: Ashgate.
- Neiberg, Michael: **The second battle of the Marne**, Bloomington, 2008: Indiana University Press.
- Philpott, William: **Bloody victory. The sacrifice on the Somme and the making of the twentieth century**, London, 2009: Little, Brown.
- Prior, Robin / Wilson, Trevor: **Command on the Western Front. The military career of Sir Henry Rawlinson 1914-1918**, Barnsley, 2004: Leo Cooper.
- Prior, Robin / Wilson, Trevor: **Passchendaele. The untold story**, New Haven, 1996: Yale University Press.
- Thompson, Mark: **The white war. Life and death on the Italian front, 1915-1919**, London, 2008: Faber and Faber.
- Zabecki, David T.: **The German 1918 offensives. A case study in the operational level of war**, London; New York, 2006: Routledge.

Citation

William Philpott: Warfare 1914-1918, in: 1914-1918-online. International Encyclopedia of the First World War, ed. by Ute Daniel, Peter Gatrell, Oliver Janz, Heather Jones, Jennifer Keene, Alan Kramer, and Bill Nasson, issued by Freie Universität Berlin, Berlin 2021-03-24. DOI: 10.15463/ie1418.10172/1.1

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- Recouly, Raymond: General Joffre and his battles, New York 1916 (Internet Archive) (Book)
- Reichsarchiv (ed.): Schlachten des Weltkrieges in Einzeldarstellungen, various vols., Oldenburg 1916-1930 (Internet Archive) (Database)
- Repington, Charles à Court: The First World War, 1914-1918: Personal Experiences of Lieut.-Col. C. à Repington, 1920 (Internet Archive) (Article)
- Rogge, Robert E.: 304th Tank Brigade: Its Formation and First Two Actions, 1988 (Fort Benning Maneuver Center) (Article)
- U.S. Army Ordnance Dept.:Handbook of artillery, including mobile, anti-aircraft and trench materiel, 1920 (Internet Archive) (Article)
- WWI Surviving Artillery (Passion & Compassion 1914-1918) (Database)

Metadata

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Thematic Section(s)

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Warfare and the military > Warfare, land > Attrition warfare
Warfare and the military > Warfare, land > Chemical warfare
Warfare and the military > Warfare, land > Tank warfare
Warfare and the military > Warfare, land > Trench warfare

Author Keywords

tactics; operations; artillery; attrition; Ferdinand Foch

GND Subject Headings

Weltkrieg [1914-1918] ; Kriegführung

LC Subject Headings

World War, 1914-1918 ; Warfare

Rameau Subject Headings

Guerre mondiale (1914-1918) ; Art et science militaires

Key Person(s)

Rawlinson, Henry; Allenby, Edmund Henry Hynman Allenby, Viscount; Pershing, John J.; Foch, Ferdinand; Brusilov, Alekseĭ Alekseevich; Pétain, Philippe; Nivelle, Robert Georges; Ludendorff, Erich; Cadorna, Luigi; Falkenhayn, Erich von; Moltke, Helmuth Johannes Ludwig von; Haig, Douglas; Wilhelm, Crown Prince of Germany; Joffre, Joseph Jacques

Césaire; Fayolle, Émile

Key Location(s)

Amiens; Bullecourt; Cambrai; Flaucourt Plateau; Flers-Courcelette; Fleury; Fort Douaumont; Fort Vaux; Gorlice; Loos; Messines; Mort Homme; Neuve-Chapelle; Notre Dame de Lorette; Paris; Passchendaele; Tarnow; Thiaumont; Verdun; Vimy; Ypres

Title

Warfare 1914-1918

Author(s)

William Philpott

Article Type

Handbook Article

Classification Group

Survey Article (Thematic)