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THIRD-GENERATION WARFARE AND THE WAR IN THE TRENCHES

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JCSP 43 DL

Exercise *Solo Flight*

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The war in the trenches of the First World War (WWI) when viewed in retrospect appears to be one of great loss of life and a waste of human potential. Waves of men rising out of their trenches and charging towards their enemy, only to meet certain death by artillery and machine gun fire are easily imagined. What is less evident was how the armies on the Western Front adapted to the conditions of the war and learned through trials by fire how to save lives and gain the upper hand. William S. Lind, an American scholar used early examples of tactical innovation in the German Army to lay the ground work for a concept of war fighting he called manoeuvre warfare.

A concept embraced by Western Armies, manoeuvre warfare doctrine has been held out as the solution to the attrition warfare of WWI. Manoeuvre warfare sees strategic and operational commanders outthinking, outpacing, and outwitting their enemies on the battlefield. In using cunning and guile, commanders are expected to avoid attrition at all costs, fighting like the Germans Lind has held up as a guiding beacon of third-generation warfare. While there is no doubt manoeuver warfare found its origins in WWI, can it be its source the same army that failed to bring victory to the German people?

This essay will examine the origins of third-generation warfare in WWI to determine if the German Army was as influential as Lind has proclaimed they were in its development. In doing this, this essay will compare Lind's examples of tactical and organizational advances with

those of the Allies. It will also examine burgeoning elements of third-generation warfare and the employment of the 'operational art' at the strategic and operational levels on the Western Front.[1]

Lind's 1985 release of the Maneuver (sic) Warfare Handbook reframed the concept of warfare theory as one heavily reliant on speed and focus. His theory was derived from the German Army's conduct and tactical advances in both world wars and the concept of the "Observe Orient Decision Action (OODA) Loop" defined by Colonel John Boyd, a United States Air Force pilot. In viewing German actions through the lens of the OODA Loop, Lind determined the likelihood of success over an adversary increased where the adversary was outpaced.[2]

Lind designated manoeuver warfare as 'third-generation warfare', fixing its beginnings to WWI, and used tactical developments in the German Army to distinguish it from the warfare that had preceded it.[3] To make this distinction, Lind used a combination of weapons and tactics to delineate previous generations, began with development of 'first-generation warfare' in the mid-17th Century.[4] Stating the first-generation was based on the range of the smoothbore musket, this form of warfare was dominated by lines of infantry facing off, and columns of soldiers moving about the battlefield. The 'second-generation of warfare' beginning in the mid-19th Century was marked by the widespread adoption of a rifled barrel, the nascent machinegun, and quick-firing artillery.[5]

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[1] The essay is dedicated to my Great-Great Uncle, Private Theodore Francis Arsenault of the 14th Canadian Infantry Battalion (The Royal Montreal Regiment), a son of Prince Edward Island and a soldier of the Great War, who was fatally wounded on August 9th, 1918, on the second day of the Battle of Amiens, not far from where he lays buried.

[2] William S. Lind, "The Theory and Practice of Maneuver Warfare." In Maneuver Warfare: An Anthology, p. 13.

[3] Ibid, 4.

[4] Ibid.

[5] Ibid, 5.

While claiming third-generation warfare had begun in WWI, Lind identifies elements of both first and second-generation warfare that continued to dominate Allied military theory and doctrine during WWI. Foremost, he claimed the military culture of an ordered battlefield, the hallmark of Frederick the Great's Prussian Army, including "control, centralization and standardization which…are not necessarily helpful on modern battlefields," pervaded the Allied approach to warfare.[6] The French 'methodical battle' was a key holdover tactic from the second-generation. Comprised of artillery support to and advancing infantry who took linear bounds, and who dug linear defensive lines, each employing a closely coordinated and meticulously detailed artillery fire plan.[7]

What separated the third-generation from the others in Lind's mind were initiated by the German Army in the manner they adapted their defensive and offensive tactics to the conditions on the Western Front. Lind states -

> …the Germans settled on an approach that took advantage of some of their traditional virtues: their fondness for decision in battle, the initiative of their junior leaders and their "every problem demands a unique solution" attitude toward tactics. Combined with improved artillery techniques and weapons – such as a light machine gun, portable trench mortars, hand grenades, and flamethrowers that gave unprecedented power to small units.[8]

Lind's analysis of Allied tactical advances in WWI was less favourable. He found the Allies tactics to be crude and overly reliant on the artillery to defeat the enemy. Attributing the ultimate Allied victory to the rail system they had developed to move soldiers and resources

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[6] Ibid, 4.

[7] Global Security, "the French Army Between the Wars," GlobalSecurity.Org, accessed on 14 May 18, from https://www.globalsecurity.org/military/world/europe/fr-armee-inter-war.htm

[8] Lind, 6.

around the battlefield, and the German's lack of the same.[9] In so easily dismissing the Allies, Lind failed to view the war within its wider context. On closer examination examples of his third-generation warfare concepts are recognizable among the Allies on the Western Front.

Concerning junior leaders initiative, Lieutenant-General Gough, Commander V Corps, in discussion with his senior leaders in June 1917, specifically addressed it. Stressing officers from platoons to battalion command "must be taught and encouraged to act upon their own initiative and responsibility."[10] Reasoning the high probability of communications failures would prevent higher headquarters from influencing decision making in battle, he demanded junior leaders be ready to act in the moment without receiving further direction from their commanders.

General Joffre, commander of French forces had made similar comments on initiative in his report following the Battle of Verdun. Writing in April 1916, that "every artillery commander…should rely on himself only [for execution of the fire plan], and that in no case can inaction be justified by the absence of orders or the destruction of the means of communication."[11] It is clear Allied commanders had linked the requirement of junior leader initiative in battle directly to failing communications.

Advancements in artillery techniques were not limited to the Germans and Joffre attributed some German developments at Verdun to "the methods which we had twice used against them, and the experience which we taught them."[12] The utility of the creeping artillery

[9] Ibid, 5-6.

[10] Andrew Simpson, "The Operational Role of British Corps Command on the Western Front, 1914-18" (PhD dissertation, University College, 2001), 119.

[11] General Headquarters of the Eastern Forces (GHQEF) (France), Memorandum relating to the Experience gained from the Verdun Actions (General Headquarters: Headquarters Staff 3rd Bureau, 1916), IV(c).

[12] Ibid. IV.

barrage was realized by the Allies by the end of the Battle of the Somme in late 1916, and was readily adopted.[13]

Contrary to Lind's contention it was evident by the end of 1916 that the weight of the artillery fire had little effect on defeating a well dug-in enemy, because when a barrage lifted the defenders would quickly re-establish their defence.[14] The creeping barrage allowed the infantry to advance behind it so closely that they could arrive at the enemy trenches within seconds of the barrage moved on and before the enemy could reaction. When the Germans began shelling the area just behind the creeping barrage,[15] the Allies turned to counter-battery fire to deny the enemy their guns.

Early in 1917, the Canadian Corps Commander, Sir Julien Byng, established the Canadian Counter Battery Office (CCBO) and appointed gunner and McGill engineering professor, Lieutenant Colonel A.G.L. McNaughton, as its head. Tasked with suppressing enemy artillery batteries to reduce infantry casualties, McNaughton visited both the French and British gunners of Verdun and the Somme in search of lessons learned.[16]

McNaughton took a scientific approach recruiting scientists to his office. Together they analyzed the effects of weather on trajectory, located enemy batteries by their mussel flashes and sound, and determined how barrel wear influenced the flight path. He also used aerial reconnaissance photos to pinpoint hidden batteries. The result was a reduction of casualties to enemy fire in battle.[17]

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[13] Tim Cook, "Shock Troops, Canadians Fighting the Great War 1917-1918" (Penguin: Toronto, 2008), 31-32.

[14] GHQEF, III(a).

[15] Cook, 32-33.

[16] Ibid, 34-35.

[17] Bill Rawling, "Surviving Trench Warfare: Technology and the Canadian Corps, 1914-1918," (Toronto: University of Toronto Press, 1992), 189-190.

Verdun and the Somme had demonstrated the value of an infantry platoon supplied with a wider range of weapons. As with McNaughton, Byng dispatched a division commander, Major General Sir Arthur Currie, to study infantry tactics.[18] By late 1916 the BEF was considering changes to the platoon organization to add a Lewis gun and a bomber section in place of two rifle sections.[19] The new organization was adopted in February 1917 and the US War Department issued the British instruction to its army that June.[20]

The hand grenade for both an offensive and defensive fighting was heavily favoured by the infantry.[21] The bombing section was in direct response to the German's strong point defence in-depth tactic.[22] The Lewis gun section grew out of the Somme, where an increasing need for localized firepower saw each platoon issued with one by its end.[23] The remaining sections, each with two rifle-grenadiers, were employed in bomb supported flanking assault on enemy strong points under protective Lewis gun fire. This enhanced the fire power and capability of the infantry platoon making it an independent fighting force at the tactical level.

These advancements make it difficult to determine if Germans development and innovation were the result of unique cultural traditions, as Lind contends. The loss of communications recognizably placed emphasis on junior officer initiative and German artillery advancements can be attributed French tactics at Verdun. McNaughton's counter-battery innovations were unique on the Western Front and the increased platoon firepower evolved from the Somme.

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[18] Alex D. Haynes, "The Development of Infantry Doctrine in the Canadian Expeditionary Force: 1914-1918," Canadian Military Journal Vol. 8, no. 3 (Spring 2008)

[19] Rawling, 97.

[20] War Office, Instructions for the Training of Platoons for Offensive Action (Washington, DC: Government Printing Office, 1917)

[21] Colour Sergeant Instructor J. Coleman, The RCR, "Bombs Bombers Bombing,"(2nd Canadian Division: Toronto, 1915), 3-4.

[22] Rawling, 83-84.

[23] Ibid, 82.

Lind also focused on the concept of the defence in depth as a key German innovation. Using strong points on advantageous terrain using machine guns to cover the gaps over lines of infantry, the idea was to absorb attacks by drawing them in to areas covered by machine guns alone. Once sufficiently slowed, repeated counter attacks supported by artillery would be used to dislodge them. This defensive strategy is little different from Joffre's direction to the French infantry following Verdun.

Specifically reiterating three principles of defence including defence in depth, retention of ground, and the counter-attack, he demanded written defensive plans be drafted. Joffre stressed lines of defence following the terrain, siting positions on reverse slopes, establishment of 'points d'appui' (strong points), and having integrated corps level defensive artillery plans.[24] The Canadians also adopted a strong point defence model where gaps were covered by machine gun.[25]

Germans attacks were preceded reconnaissance, concentrated artillery fire on a narrow front, where and the main assault force was led by small teams working their way around 'points d'appui' into rear areas.[26] The Germans had begun small unit infiltrations in 1915[27] to reduce casualties from machine gun fire, a tactic observed at Verdun.[28] Using 'surface and gap' technique. artillery to penetrate weak points in the Allied lines (gaps) to bypass the 'points d'appui' (surfaces), in order to attack artillery and service support units located in the rear area.[29]

In preparation for the assault on Vimy Ridge, Currie returned from the French with two concepts the Canadian Corps would embrace; reconnaissance based intelligence gathering, and

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[24] GHQEF, II.
[25] Haynes.
[26] Ibid, I.3, 4.
[27] Rawling, 173.
[28] GHQEF, I.4.D.
[29] Lind, 7.

training.[30] McNaughton too had seized on the importance of reconnaissance in his counter-battery work, and both relied on aerial photos of German positions to prepare for battle.[31] Trench raiding was heavily employed to test enemy defences, identify strong points, and capture German soldiers, all to add to the intelligence picture prior to the assault.[32]

Training in the Canadian Corps took the form of both individual and collective training. Individual training at the soldier level focused on infantry weapons and their employment within the new platoon model. Collective training by units included going over 'taped courses' laid out to represent the ground they would attack over and where their objectives were.[33] Commanders and headquarters staff officers studied maps and large scale models to learn the terrain and how the battle was planned to progress.[34] This practice, in addition to map and photo studies provided a strong understanding of the ground in front of them.

These offensive preparations came together during the assault at Vimy, and the formula was repeated at Hill 70 and Passchendaele. The first wave followed the creeping barrage in platoon groups and used platoon or company fire and manoeuvre to destroy strong points using machine guns and rifle grenades to pin down the enemy while the assault force came in from a flank as the barrage moved on.[35] Unlike the German first wave that by-passed surfaces (strong points), the Canadian Corps destroyed them, while the artillery suppressed German artillery and close counter attack routes with fire.

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[30] Rawling, 90.
[31] Ibid, 108.
[32] Ibid, 88.
[33] Douglas E. Delaney, "The Corps Nervous System in Action: Commanders, Staffs, and Battle Procedure," in Capturing Hill 70: Canada's Forgotten Battle of the First World War (Vancouver: UBC Press, 2016), 69-70.
[34] Desmond Morton, "When Your Number's Up," (Random House: Toronto, 1993), 167-169.
[35] Rawling, 120-124.

Each assaulting wave was followed by a 'mopping up' company tasked to clear enemy who were bypassed. Once the force reached their objective line they would begin consolidating their positions, while the next wave, following closely in columns, passed through them.[36]

Comparing Lind's understanding Germans developments against those of the Allies, it becomes difficult to attribute advancements to either side. Joffre indicates both French and German tactical advancements were in part derived from their shared experience on the battlefield, while innovations like counter-battery fire were unique to the Allies. What analysis does show is each side working to overcome the nature of warfare dominated by weapons of hitherto unknown lethality.

> …World War I German tactics, offensive and defensive, remain the basis of modern maneuver warfare tactics: a defense in depth that combines positions on reverse slopes, ambushes, and small units operating independently to harass, confuse, and pin, with a powerful counterattack intended to cut off and encircle; and an attack that penetrates in multiple thrusts aimed at weak points, reinforces successes and exploits without too much concern for flanks, uses speed as its preeminent weapon, and again seeks the enemy's rear and encirclement.[37]

Speed in battle is a characteristic Lind attributes to manoeuver warfare. In accepting war is fundamentally chaotic, the force that adapts to it more quickly will have an advantage over their opponent. Lind credits Boyd with recognizing and articulating the operational cycle that describes it. The OODA Loop relies on determining the enemy's strengths and weaknesses through reconnaissance and intelligence gathering, and using that to define the enemy, developing a courses of action and executing it.

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[36] Ibid, 118-120.
[37] Lind, 7.

A commander who completes the OODA Loop faster than the adversary, and in anticipation of them, can be described as employing what Lind calls the 'operational art.'[38] The operational art is the manner in which a commander wields their force "by fighting only where and when necessary in order to get at an enemy's centre of gravity." The intent of this is to avoid unnecessary battle, attack weaknesses, and to neutralize the enemy's centre of gravity underpinning their effort.[39]

Operational Level Manoeuvre Warfare

The Battle of Hill 70 in August 1917 is an example of the operational art in practice. Currie, the recently appointed commander of the Canadian Corps, was ordered to take Lens, an objective selected by BEF Commander Field Marshall Haig, in order to draw German forces away from Flanders. A break through at Passchendaele was the BEF's strategic objective to defeat the depleted German army, but in anticipation of it, the Germans were reinforcing Flanders with divisions from across their army. Haig's plan for Lens was to divert German attention to the area and halt redeployments to Flanders from there.[40]

In assessing the objective, Currie determined capturing Hill 70 to the north, overlooking Lens, would render Lens untenable and force a German withdrawal. From a manoeuvre warfare perspective, Lind would describe this as avoiding a fight in bypassing Lens, but forcing its collapse by rendering it untenable.[41] That Currie was able to modify Haig's order by offering his own plan demonstrates an element of 'mission command'[42] in the BEF whereby deference was

[38] Lind, 9.
[39] Ibid, 10.
[40] Douglas E. Delaney and Serge Marc Durflinger Eds, "Capturing Hill 70: Canada's Forgotten Battle of the First World War," (Vancouver: UBC Press, 2016), 22-24.
[41] Lind, 9.
[42] Ibid, 10.

given to the 'man on the spot.'[43] Not taking Lens, but rendering it untenable, not only met the superior commander's 'intent' of keeping enemy reinforcements away from Flanders, it would drive them from Lens.

Currie's two division attack on Hill 70 was largely completed in with a few hours, with all objectives being consolidated on by the end of the afternoon. The speed of the attack and its decisive nature were critical to its success. The immediate Germans counterattack was predicted by Currie, and so he used their doctrinal response to defeat them as they formed up. Using observed artillery fire directed from the high ground the Canadians had just captured Currie succeeded by closing the OODA Loop more quickly than his opponent.[44] The Canadian Corps defeated 21 separate German counterattacks in this manner,[45] and inflicted some 12-15,000 German casualties,[46] thus ensuring no German divisions in the area would be reassigned to Flanders. Although Lens was never captured, the commander's intent as Currie understood it was achieved.

Strategic Level Manoeuvre Warfare

The Battle of Amiens saw the operational art exercised at the strategic level in land battle as the BEF's Fourth Army attempted to break the German line in conjunction with a wider Allied attack. Beginning on 8 August 1918, the battle was the culmination of a plan initiated by General Ferdinand Foch, the commander on the Western Front, and embraced by Haig. In the

[43] Simpson, 65, 82 & 89.

[44] Tim Cook, "The Fire Plan: Gas, Guns, Machine guns, and Mortars," in Capturing Hill 70: Canada's Forgotten Battle of the First World War (Vancouver: UBC Press, 2016), 105 & 121-126.

[45] Tim Cook, "No Place to Run: The Canadian Corps and Gas Warfare in the First World War," (Vancouver: UBC Press, 2000), 131.

[46] Cook, "The Fire Plan," 131.

proceeding days, 300,000 allied troops[47] were secretly redeployed to the area, air superiority was established, and the largest tank force to that date was assembled for the attack. Together they formed the first all-arms manoeuvre force in the history of warfare.[48] In it, the Canadian Corps attacked over ground their Army Commander described as his 'chief anxiety'.[49]

The operation relied on intelligence and employed deception, speed, and tactical acumen. It took the enemy completely by surprise and General Erich Ludendorff would later say "August 8th was the black day of the German Army in the history of the war."[50] The Canadian Corps pushed the Germans back 13 kms by the end of the day, in the single largest advance on the Western front to that point.[51] The success of the battle was reinforced by the flexible leadership within the corps where junior leaders seamlessly replaced their superiors and pressed on as casualties mounted.[52] Amiens demonstrated the coming of age of the Allied armies. That Lind failed to acknowledge it is remarkable, because if third-generation warfare began in WWI, August 8th, 1918 could be marked as the day was first strategically achieved for the first time.

If the operational art is the link between tactics and strategy,[53] the Allied naval blockade of Europe is the very expression of that art. Imposed on Germany by the Royal Navy in the North Sea, and by the French in the Adriatic, in August 1914, the blockade decisively contributed to victory.[54] The effects of the blockade lead the Germans to declare unrestricted attacks on all merchant shipping on February 1st, 1915, and unrestricted submarine warfare in early 1917, which ultimately brought the US into the war against Germany within months.

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[47] Tim Cook, "Shock Troops: Canadians Fighting the Great War 1917-1918 (Volume 2)," (Toronto: Penguin Canada, 2009), 411.
[48] Ibid, 424.
[49] Ibid, 416.
[50] Ibid, 437.
[51] Ibid.
[52] Ibid, 443.
[53] Lind, 10.
[54] Martin Gilbert, "First World War," (Toronto: Stoddart, 1994), 47.

Civilian related blockade deaths in Europe were a daily occurrence by 1916 and was being felt by German soldiers on the Front; by war's end 762,000 civilians had died as a result.[55] In early 1918 the Austro-Hungarians recalled seven divisions to supress blockage related food riots in their major cities.[56]

Although a standard naval tactic, when viewed in the context of manoeuvre warfare, it was a strike against the enemy's war waging capacity, which was arguably the enemy's centre of gravity. The blockade starved the population and interfered with its war industry, without directly attacking it. Lind contends that the operational art increases speed by avoiding battle, and tempo is the rate at which that speed is maintained.[57] In the case of the blockade, when taken overtime, it did not directly serve to increase Allied tempo, but in working against the German war machine, it produced a relative increase in Allied tempo in comparison to that of the Germans.

This essay examined the origins of third-generation warfare in WWI to determine if the German Army was as influential as Lind claims they were in its development. Had Lind delved deeper, he would have found innovation among the Allies and could have discerned how each learned from the other's failures and successes. It is with irony that Lind attributed the Allied success not to their skill, but to their ability to rapidly redeploy soldiers using their light rail network. A light rail network that moved 300,000 soldiers prior to the Battle of Amiens, unnoticed. In failing to see this, Lind undermined his own argument by not recognizing how the Allies moved through the OODA loop more quickly than their adversaries.

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[55] Ibid, 256.
[56] Ibid, 391-392.
[57] Lind, 9.

There is no doubt the Germans were efficient, or held their own on the Western Front through four years of war, but where leveraging the operational art was concerned, they finished second. The blockade was a strategic manoeuvre of no little consequence that struck Germany's war waging ability and ultimately set the stage for success at Amiens. This essay is not intended to attribute third-generation warfare to the Allies, but to demonstrate it grew out of the circumstances of WWI rather than from anyone parties to the conflict.

Bibliography

Lind, William S. “The Theory and Practice of Maneuver Warfare.” In Maneuver Warfare: An Anthology

Simpson, Andrew. “The Operational Role of British Corps Command on the Western Front, 1914-18,” PhD dissertation, University College, 2001, from http://discovery.ucl.ac.uk/1349874/1/367588.pdf

France. General Headquarters of the Eastern Forces. Memorandum relating to the Experience gained from the Verdun Actions (dated 5 April 1916). General Headquarters: Headquarters Staff 3rd Bureau, 1916, from https://s3-ap-southeast-2.amazonaws.com/awm-media/collection/RCDIG0000611/bundled/RCDIG0000611.pdf

Coleman, Colour Sergeant Instructor (The RCR) J. Bombs Bombers Bombing. 2nd Canadian Division: Toronto, 1915, from http://wartimecanada.ca/document/world-war-i/training-manuals/you-have-explosives-good-servant

Haynes, Major Alex D. “The Development of Infantry Doctrine in the Canadian Expeditionary Force: 1914-1918.” Canadian Military Journal Volume 8, no. 3 (Spring 2008), from http://www.journal.forces.gc.ca/vo8/no3/haynes-eng.asp

Delaney, Douglas E. “The Corps Nervous System in Action: Commanders, Staffs, and Battle Procedure.” In Capturing Hill 70: Canada’s Forgotten Battle of the First World War, 51-77. Vancouver: UBC Press, 2016.

Cook, Tim. No Place to Run: The Canadian Corps and Gas Warfare in the First World War. Vancouver: University of British Columbia Press, 2000.

Cook, Tim. Shock Troops: Canadians Fighting the Great War 1917-1918, Volume 2. Toronto: Penguin Canada, 2009.

Gilbert, Martin. First World War. Toronto: Stoddart, 1994.

Morton, Desmond. When Your Number’s Up. Random House: Toronto, 1993.

United States. War Office. Instructions for the Training of Platoons for Offensive Action. Washington, DC: Government Printing Office, 1917. From https://ia801403.us.archive.org/8/items/instructionsfort00washrich/instructionsfort00washrich.pdf