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EXERCISE/EXERCICE MDS THESIS

Wind Without Rain: The Erosion of Canadian Logistics Thought Since The Hundred Days

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*The one field of Napoleonic Warfare that is still believed to have been fundamentally different from anything that went previously is the logistic one, which is itself enough to suggest that the subject has been neglected.*¹

If staff planners and historians ever contemplate World War I they are invariably drawn to the solemn heights of Hill 145 on Vimy Ridge. To the informed Canadian, Vimy embodies all that is worthy of serious reflection in the war to end all wars; but, Vimy Ridge has actually dominated professional military reflection on World War I for long enough. There is no denying that the battle was an enormous milestone in the history of Canadian professional arms. Certainly it was at Vimy that the Canadian Corps fought together as a formation for the first time, a fact that can neither be trivialized nor forgotten. Lost in Vimy's long shadow, however, is perhaps an even more significant military achievement: the Hundred Days Offensive that finally broke the stalemate on the Western Front and brought an end to World War I.² In terms of inter-arm cooperation and the true nature of modern warfare, the Hundred Days Offensive prosecuted by the Allied Forces was an extraordinary military achievement. It is more than a little ironic that researchers have only slightly probed the campaign that inflicted twenty per cent of Canada's war dead in the 1914-18 conflict.³ This final offensive push, that began on 8 August 1918 at the Battle of Amiens-- which Ludendorff described as: "the black day of the German Army," and ended with the capture of Mons in November, is the much more telling laurel for the Canadian Corps.⁴ As such, the campaign serves as a rich area for

¹ Martin Van Creveld, *Supplying War. Logistics from Wallenstein to Patton* (Cambridge: Cambridge University Press, 1977), 2.

² Shane Schreiber, *Shock Army of the British Empire. The Canadian Corps in the Last 100 Days of the Great War* (New York: Praeger, 1997), 2.

³ Norm Christie, *For King and Empire. The Canadians at Cambrai September -October 1918* (Nepean: CEF Books, 1997), 1.

⁴ John A. English, *Lament for An Army. The Decline of Canadian Military Professionalism* (Toronto: Irwin Publishing, 1998), 18.

the study of Canadian Army operations in a modern context. While the pivotal Battle of Vimy Ridge continues to cast a long shadow over the Canadian national psyche and the esprit de corps of the current Canadian Forces, the lessons of the Hundred Days are only just beginning to be appreciated.

Most contemporary studies of Canadian Army logistics begin with World War II where the doctrine of brute logistics came of age.⁵ The prevailing remembrance of World War I remains the grinding attrition of the Western Front and the popular belief holds that nothing can be learned from such a fatalistic quagmire. On the contrary, the last stanza of World War I is immeasurably valuable for the study of Canadian logistics practices. The campaign enabled the realization of a high watermark in the embryonic yet durable Canadian Army logistics system. Not only was the Canadian Corps moving on a grueling offensive, fighting three major battles at Amiens, Arras and Cambrai in a short period of time, but it also acted as the spearhead of the attack, the hammer that the Allies used to, "...crack some of the most vital points of the German defence."⁶ Use of the Canadian formation in this fashion presented significant logistics challenges. For the Canadian logistic structure on the Western Front, the Hundred Days Offensive would be its greatest test of the war. Canada's Hundred Days, as G.F.G. Stanley dubbed them in his seminal work on Canadian soldiers, would set the mold for Canadian Army combat service support (CSS) doctrine and practices for the remainder of the twentieth century.⁷

The Canadian Army has undergone numerous changes to its structure, doctrine and tactics in the last 85 years. However, attention for doctrine and tactics has not been

⁵Director of Land Strategic Studies, *Future Force. Concepts for Future Army Capabilities* (Kingston: Queen's Printer, 2003), 135. Brute logistics refers to support relying on mass.

⁶English, *Lament for An Army...*, 18.

⁷G.F.G. Stanley, *Canada's Soldiers. The Military History of an Unmilitary People* (Toronto: Macmillan, 1960), 1.

universally invested in the operational functions of the army and sustainment in particular has been neglected.⁸ The return to peacetime configuration after World Wars I and II and, to a lesser extent, the Korean War, saw army logistics units reduced in size or disbanded altogether. Changes in logistics in the Canadian Army since World War I reflect a fascination with structure and form over content and practices. Although there has been a great deal of organizational tinkering, Canada's Army has not changed its logistics tactics, techniques, and procedures (TTPs) at all since the Hundred Days Offensive. For example, the divisional wagon trains sustaining the fighting divisions of the 1918 Canadian Corps and the divisional services group (DISGP) described in the current logistics doctrine manual and crudely replicated on Exercise *Rendez Vous (RV)* 89 are almost perfectly congruent in terms of concept, structure and TTPs.⁹ CSS innovation, with but few exceptions, virtually stopped with the capture of Mons and has remained stagnant to present day.

A review of the logistics activity that sustained the Hundred Days campaign demonstrates what is achievable when imagination and creativity meet experience. The senior leadership in the British Expeditionary Force (BEF) and in particular the Canadian Corps was able to overcome an embedded institutional bias that encouraged commanders to remain aloof from the logistics and administrative staffs.¹⁰ The attention afforded logistics in 1916 by Field Marshall Haig at the operational level and Lieutenant-General Byng at the tactical level was instrumental in attaining offensive success in late Summer, 1918. Initially, the logistics structures of the British and Canadian Expeditionary Forces

⁸ Sustainment (now simply Sustain) is one of the operational functions recognized in current doctrine. It embraces all of the logistics systems that support the generation and application of combat power.

⁹ B-GL-300-004/FP-001. *Land Force Sustainment* (Kingston: Queen's Printer, 1999), 23 *et passim*.

¹⁰ Ian Malcolm Brown, *British Logistics on the Western Front 1914-1919* (Westport: Praeger, 1998), 110.

were not equal to the sustainment requirements of modern, industrialized warfare. This issue is vividly demonstrated on closer inspection of the BEF logistics shortcomings in 1916 and Haig's role in correcting them. Without the requisite changes at the strategic and high tactical levels the Hundred Days campaign would not have been possible. Additionally, the Canadians were able to harness imagination to overcome the challenges of a changed battlefield. Unique Canadian Corps characteristics like redundancy, an enhanced transportation capability, and affiliation enabled the Corps to adapt to the offensive requirement in a manner denied to smaller British Corps. When the active interest of commanders was combined with a high degree of innovation among Canadian Corps logisticians superlative results were achieved during a strenuous period of combat.

Advances in sustainment have been almost exclusively technological from 1919 to the present. The exponential evolution of logistics practices slowed after World War I as equipment enhancement quickly eclipsed doctrinal innovation. The mechanization of CSS assets was the final gloss coat applied to the doctrine of 1918 during World War II. In the aftermath of the Korea conflict, the Canadian Army developed the service battalion concept to sustain what became its fundamental post-war structure, the brigade group. The development of the brigade group service battalion was an ingenious achievement, easily the most brilliant advance in Canadian sustainment thinking since the retooling of BEF and Canadian Corps logistics after the Battle of the Somme. Regardless, the service battalion soldier honed his craft in a manner analogous to the previous two generations of support soldiers. Typical of logistics refinement in post-war Canada, this advent was largely a structural, albeit, highly successful enhancement to old practices. It was not a new paradigm for tactical sustainment.

Throughout the 1980s and early 1990s, Mobile Command struggled to field a workable facsimile of divisional sustainment doctrine through its series of divisional *RV* exercises. The net effect of these exercises was to polish the rust off an antiquated doctrine only to realize that the practices of 1918 were no longer relevant to the standing field force. Despite this revelation, the army did not develop a new sustainment doctrine for its force. It could not. Senior combat arms interest in logistics since 1968 had been aesthetic at best--too tepid to drive requisite change. Instead, the focus of army leadership was on protecting combat arms units in a long series of departmental budget cuts. This tribal, protective approach created a fascination with structure and inherent cost savings where logistics development was concerned. To make matters worse, the logistics community was neither interested in a disciplined habit of doctrinal development, nor was it concerned with any form of institutional learning from empirical lessons. Doctrinal stagnation was exacerbated by the practice of borrowing the logistics doctrine of allies such as the United Kingdom and the United States. With the high level of involvement in international operations, modern Canadian sustainment TTPs should be the envy of the western world. Canada should be an exporter not an importer of sustainment doctrine in the asymmetric environment. Instead, operational level doctrine has been borrowed in bulk and the archaic tactical sustainment practices of World War I remain in use in the contemporary field force largely because Canadian logisticians appeared to have been either unwilling or uninterested in thinking for themselves. Inside this tapestry of fiscal restraint and deeply engrained cultures, CSS techniques have been vacuum packed from the war of our grandfathers.

There is a dire, current need to discard out-dated mythologies and dogmas that served the Canadian Corps so well in 1918. At the same time, ironically, an intellectual investment identical to the Hundred Days innovation is crucial for Canadian Army logistics. In particular, the conflict envisioned in the United States Army Joint Vision 2020 and the Canadian version of the future battle space under development by the Director of Land Strategic Concepts auger that time-revered techniques like delivery points, commodity points, and ammunition dumps are more dated than ever.¹¹ These concepts envision a non-contiguous battlefield with no clear “front” and no singular “rear area.” With no definable front and rear areas, flow of replenishment along a progressively more dangerous line is neither realistic nor desirable. The shape of future conflict punctuates the urgent requirement for innovation. New methods need to be harnessed that reduce the logistic footprint of the fighting force and enhance the survivability of logistics units. What form should logistics innovation take? Are there lessons to be learned from Canadian logistics evolution in 1918 or would it be best to resist tinkering with something that always seems to get the job done? The nature of the non-contiguous battlefield demands that the army remits a robust intellectual investment to sustain the Army of Tomorrow.¹² The requirement for a ground swell of imagination similar to the efforts of Julian Byng and Arthur Currie is necessary for the Canadian Army to fight and win its future battles. The proclamation of the Army Strategy, *Advancing With a Purpose*, and realization of the full potential of the relatively new Directorate of Army Doctrine indicate that the possibility for dramatic, positive change to

¹¹ Delivery p p p p

sustainment doctrine and TTPs is within the grasp of the Canadian Army for the first time in a very long time.¹³

Towards the Hundred Days

There are myriad logistics lessons to be learned in the rich operational period of 8 August to 11 November 1918. Indeed, the Hundred Days is the optimum place to look at World War I logistics innovation, the point where all the hard lessons of the Somme came to telling fruition. It was only during this portion of World War I that administration, like all other proponents of combat power generation, was burdened with the authentic weight of modern warfare. John English wrote:

Nowhere was the modernity of the First World War better illustrated than during the battles of the Hundred Days, which started with the attack at Amiens on 8 August 1918 and finished with the capture of Mons 100 miles away on November 11. At Amiens, inter-arm cooperation among the forces of the British Empire reached new heights as aircraft, guns, tanks, and infantry all acted in concert.¹⁴

Notwithstanding the lethal modernity of combat power in the trenches of Europe from 1915 to 1917, the logistics structures and systems sustaining the BEF and by extension, the Canadian Corps on the Western Front were initially static and ill-suited for offensive success.¹⁵ Lines of communication ran eastward from French ports like Boulogne towards the Western Front by rail and then, closer to the front changed over to light rail, trucks and finally, the horse-drawn wagons of the divisional trains.¹⁶ If an offensive were to succeed on any grand scale, the lines of communication (LOCs) would

¹³ Commander Land Force Command, *Advancing with a Purpose, The Army Strategy* (Ottawa: Director Land Communications, 2002), 8.

¹⁴ John English, “*The Operational Art: Developments in the Theories of War*” in *The Operational Art: Developments in the Theories of War*, ed. B.J.C. McKercher and Michael A. Hennessy (Westport: Praeger, 1996), 12.

¹⁵ Malcolm Brown, *British Logistics...*, 139.

¹⁶ Arnold Warren, *Wait for the Waggon, The Story of the Royal Canadian Army Service Corps* (Toronto: McClelland and Stewart, 1961), 84. Boulogne was the port through which the Canadian Corps was sustained throughout the war.

need to stretch and remain responsive to more stretching. The key to the issue was how to respond to success.

Logistics Architecture—The Canadian Corps Within the BEF

A professional appreciation of the Canadian Corps' logistic achievements is best grounded on a review of the respective staffs and line units that directly impacted its sustainment process. The Canadian Corps logistics architecture was integral to the larger framework of the BEF. At the operational level, the BEF logistics staff was divided into three different branches of the General Headquarters (GHQ): an Adjutant General Branch (AG Branch) an Inspector General Communications (IGC) and a Quartermaster Branch (Q Branch). The AG Branch handled such specific sustainment issues as personnel, casualties, medical and sanitary services.¹⁷ The IGC oversaw the management of all traffic on the LOCs from the seaport to the fighting corps.¹⁸ The Quartermaster General (QMG) commanded the Q Branch and his staff was responsible for the replenishment of the field force.¹⁹ Each level below the GHQ had a smaller, corresponding logistics staff centred on the QMG Branch that covered all logistics concerns. For example a Deputy Adjutant and Quartermaster General (DA and QMG) presided over the sustainment at the corps level. The Canadian Corps was blessed with a talented British DA and QMG, General G.J. Farmar, whom General Arthur Currie retained in that post through to the end of the war, despite the growing competencies of senior Canadian logisticians.²⁰ Assistant Adjutants and Quartermasters General (AA and QMGs) were the senior Q officers in the divisions.

¹⁷Malcolm Brown, *British Logistics...*, 47.

¹⁸*Ibid.*, 47.

¹⁹*Ibid.*, 47.

²⁰English, *Lament for an Army...*, 16.

Like the corresponding levels of staff, logistics units became progressively smaller and more mobile the closer they got to the front. Army level units included the static organizations that operated the ports, warehouses, and railways (both heavy and light). The sinews of army support units ended at the forward railheads. From here, corps units would move the supplies forward to designated refilling points from which divisions would draw. In the Canadian formation, these corps level logistics assets were mechanical transport companies—a luxury not common to all corps of the BEF.²¹ Initially Canada operated two types of corps mechanical transport units: the Ammunition Park and the Supply Column. The former of course hauled all the Corps' ammunition and the latter was charged with hauling all other classes of supply. A unit called the divisional train anchored logistics in the various Canadian divisions. The divisional trains moved materiel to the forward brigades from the refilling points established by Corps resources. They were equipped with horses and wagons to meet the mobility challenge close to the fighting. The divisional train proved to be so resilient in structure and concept that Canada would never truly move away from them.

Triumph of Personalities

The British commanders that held direct sway over the Canadian Corps, specifically Douglas Haig and Julian Byng invested time in their sustainment structure. Both of these generals were able to enhance the logistics functionality of the Canadian Corps in a different yet profound manner. The British Army Field Service Regulations (Part II) of 1912 encouraged commanders to remain aloof from matters of administration.²² Unfortunately such a practice eroded the generation and application of

²¹ Schreiber, *Shock Army...*, 38.

²² Malcolm Brown, *British Logistics...*, 110.

combat power. Contemporary manoeuvre warfare doctrine acknowledges that combat power is generated through the integration of five balanced ingredients, including that of sustainment.²³ Overlooking one of the non-hierarchical operational functions severely impairs an army's ability to fight. The actions of Haig and Byng strongly suggest that they understood the elixir of combat power to include a sound dose of logistics. A complete understanding of Canadian CSS success during the Hundred Days cannot be achieved without a brief consideration of their respective contributions.

History has been particularly unkind to Field Marshall Haig for his part in such atrocious campaigns as the Somme and Third Ypres. It is easy to overlook accomplishments that speak to his abilities and staying power as the Commander-in-Chief of the BEF from late 1915 forward. Gervais Phillips strikes an accurate chord in recollecting Haig's administrative accomplishments:

His army was well supplied in the field, his wounded swiftly evacuated and well cared for...the figure of Haig looms ever larger as that of the man who foresaw more accurately than most, who endured longer than most and who inspired most confidence amongst his fellows.²⁴

Not only did Haig have to solve the challenges of unprecedented volumes of materiel but he also had to deal with enormous advances in technology. Some of the biggest seeds of innovation that would impact the Canadian Corps during the Hundred Days were sewn at his insistence after the Somme Offensive of 1916. Haig knew that re-working the entire replenishment system was imperative after the Somme. Despite some prescient preparations in British Industry before the war, the strategic level sustainment apparatus

²³ B-GL-300-001/FP-000 *Conduct of Land Operations—Operational Level Doctrine for the Canadian Army*. Ottawa: Queen's Printer, 1998, 25.

²⁴ Gervais Phillips, *Haig; A Great Captain*, <http://www.lib.byu.edu/~rdh/wwi/comment/haig1.html>.

of the BEF, and by extraction the Canadian Corps, was disjointed.²⁵ During the height of the Campaign, the transportation system proved incapable of delivering the crushing volumes of materiel required at the front. A report of the Ministry of Overseas Military Forces of Canada recorded: “After the Battle of the Somme, it was clearly proven that road and animal transport could not alone bring forward...the weight of war material required to stage a modern battle.”²⁶ The replenishment demand, for example, so exceeded available transportation resources that the Canadian corps-level assets quickly adapted the technique of continuous running of mechanical transport:

All during the Somme the 1st Divisional Supply Column worked twenty-four hours a day. We had two drivers for each vehicle—a driver and an assistant driver. During daylight...we put the assistant driver and a loader on the vehicle. During hours of darkness the first driver took over...²⁷

Haig was able to crack the institutional bias of the 1912 Field Service Regulations and partake in the resolution of this logistic conundrum. Against strong military advice to the contrary, Haig sought the assistance of a civilian transportation expert, Sir Eric Geddes to overhaul the sustainment system.²⁸ Geddes confirmed that the system of replenishment sustaining the BEF in 1916 was indeed inadequate. The supply and transport systems were disjointed, with no overarching control over the process. Geddes examined actual requirements in France and then systematically studied the various transportation means to get it there. A typical division in the Great War required 150

²⁵ Gary Campbell, *Getting to the Root of the Matter. The Mobilization of British Army Logistics for the First World War*. An unpublished paper submitted to Dr David Charters as part of the War Studies Program at RMC, 1999.

²⁶ Peter Wilson, ed, *Canadian Railway Troops During World War I, 1st Battalion Canadian Overseas Construction Corps, November 1917-April 1918 Volume One* (Campbellford: Wilson’s Publishing Company, 1995), 5.

²⁷ Warren, *Wait For the Waggon...*, 104.

²⁸ Malcom Brown, *British Logistics...*, 142.

tons of supply each day.²⁹ Geddes was quick to discover that materiel moving into France was at a level far below this actual requirement. In essence, the BEF was sipping through a straw when it actually required a fire hose worth of materiel, some 290, 000 tons per week by Geddes' detailed 1916 estimate.³⁰ Redundancy and volume were necessary to fight the war in Europe and to achieve these prerequisites a holistic approach to replenishment would be required. Geddes suggested that the BEF transportation system be streamlined and placed under the control of one man.³¹ He further recommended adjusting the capacity of the replenishment system so that materiel would never again constrain British operations. Haig's implementation of the bulk of Geddes' recommendations was key to making the strategic replenishment system work. If not for Haig's attention on his replenishment problem and his moral courage to demand the assistance of a civilian consultant, the foundation of sustainment would not have been constructed. His ability to ignore dated doctrine in contemporary service regulations and invest considerable effort in his sustainment architecture would have a telling effect of the Canadian Corps.

Lieutenant-General Julian Byng, who assumed command of the Canadian Corps on 28 May 1916, was instrumental in advancing the Corps' logistics proficiency.³² This increased proficiency was achieved by an increased emphasis on Q staff training and attention to administrative detail. Byng was a talented officer who quickly won the trust and admiration of the Canadians, and recognized that they "were too good to be led by

²⁹ C/JC/CPT 303/LE-30. Canadian Forces College lecture on Theatre Level Administration.

³⁰ Malcom Brown, *British Logistics...*, 146. 100, 000 tons of this figure were available in France (timber and roadstone for the most part). The delta, some 190, 000 tons would need to flow through the strategic replenishment system.

³¹ Malcolm Brown, *British Logistics...*, 141.

³² LCol Ian McCulloch, *A Study in Operational Command: Byng and the Canadian Corps* in Allan English's *The Changing Face of War* (Montreal & Kingston: McGill-Queen's University Press, 1998), 52.

politicians.”³³ Intelligent, balanced and insightful, he too was able to overcome the 1912 prejudice of Field Service Regulations Part II. Byng, a hard-nosed war fighter, was the beneficiary of a unique background and therefore acutely valuable in increasing the standard of Canadian logistics. His logistics education had begun early in his career when he worked for General Redvers Buller. Ian McCulloch observed that: “...Byng became a staff major at Aldershot, working under General Redvers Buller. There, Byng was heavily involved in the administration and training of the command...”³⁴ Buller was the father of the modern Army Service Corps and a key proponent in modernizing British Army logistics.³⁵ Serving with General Buller ensured that the young leader was immersed in all things logistic at an impressionable juncture. This early familiarity with logistics planning was reinforced by Byng’s experiences fighting under Buller in the Boer War. Byng became well versed in the criticality of LOCs, as attacks on logistics lifelines were a large part of the tactics in South Africa.³⁶ The lessons of the Boer War taught him that logistics were worthy of command attention both as friendly vulnerabilities and desirable enemy targets.

After the Somme, while Haig worked the changes required for the repair of the strategic replenishment system with Sir Eric Geddes, Byng strengthened the ability of the Canadian Corps to project logistics on the battlefield. He fully retrained the Corps staff and improved the formation’s operational functionality—including sustainment as Jeffrey

³³ *Ibid*, 56.

³⁴ McCulloch, *Study in Operational Command...*, 54.

³⁵ Arnold Warren, *Wait for the Waggon...*, 19. General Buller was a highly respected combat arms officer in his own right. Upon appointment as the British Army’s Quartermaster General in 1887, Buller sought to solidify the transportation service of the British Army in his proposal for a fully combatant transportation arm—the Army Service Corps.

³⁶ Jeffrey Williams, *Byng of Vimy* (London: Leo Cooper, 1983), 36. The author is also indebted to Dr Chris Madsen of the Canadian Forces College for the background information on the primacy of LOCs in the Boer conflict and Byng’s familiarity with their criticality.

Williams observed: “No function that contributed to the Corps’ effectiveness—engineers, signals, supplies, medical, and transportation—escaped Byng’s eagle eye....”³⁷ Further, Byng sought to increase Canadian staff competency by displacing good British staff officers holding key staff appointments within the Corps with an ever-increasing number of Canadians. This process, which would have included the Q staff, resulted in a greater number of Canadians receiving formal staff training.³⁸ He also polished the existing sustainment apparatus at the lower levels, taking an active interest in the smallest minutiae of the Corps’ CSS. Jeffrey Williams captured General Byng’s remarkable *je ne sais quois* in the deft correction of a poorly maintained harness during an inspection of a unit transport section:

He [Byng] looked it over thoroughly, fingering a buckle here and turning up a strap there, indicating that things ought to be better kept. An NCO said, ‘Sir, the leather is so old that it won’t take a shine.’ Byng looked at him thoughtfully, ‘Well, I’m old, but I am not dirty.’ It was enough.³⁹

Finally, Byng held unit Commanding Officer (CO) retreats during the winter months which entailed a number of COs spending a week as guests at his headquarters. At these spartan but cordial retreats, the Corps Commander took the time to get to know his battalion commanders and together they spent time on, “the study of tactical problems and methods of improving the administration of their units.”⁴⁰

Lieutenant-General Byng improved sustainment in the Canadian Corps quite literally from top to bottom. The Corps was much more adept at sustaining a modern

³⁷Williams, *Byng of Vimy...*, 146 .

³⁸ *Ibid*, 128. This practice served to enhance cohesion as the brigades and divisions knew the staff officers that rose to these positions. As Williams alludes in this work, there is always a distrust of the staff far away from the fight, however this distrust is mitigated when a familiar face can be attributed to the staff officer behind.

³⁹ *Ibid*, 131.

⁴⁰ *Ibid*, 147.

battle by the time Currie, the brilliantly successful Canadian officer who had demonstrated his skills as a division commander at Vimy Ridge, replaced Byng in 1917. Drilled and polished under the enlightened but iron guidance of a soldier's soldier, the logistics structure of the Canadian Corps stood ready to put the innovations of late 1916 to the ultimate test.

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Logistics Peculiarities of the Canadian Corps

The most profound sustainment lesson grasped by the Canadian Corps during the Hundred Days was that offensive success had to be underwritten by tactical logistics mobility. Proof positive of the Corps' sophisticated mobility was demonstrated by both its movement in contact with the enemy as well as its large-scale administrative movements. The Canadian Corps was passed between British Armies during the Hundred Days like a prized carpenter's tool with the intent of breaking key nodes in the German defences. John English observed: "Time and again, the Canadian Corps was used to crack some of the toughest and most vital points of the German defence, thereby creating the conditions and opportunities that allowed the Allied Armies to drive the German war machine to the point of collapse."⁴¹ For the previous two years, and indeed the balance of the Hundred Days campaign, the Corps was ensconced in the First British Army commanded by General Sir Henry Horne.⁴² But for the opening gambit of the Hundred Days, the Canadian Corps was first es to d12 0 0 12 90.000i7used to General i(r HenryRawlinsonr'?

Operations at Amiens were defined by a taut secrecy that resonated throughout all levels of preparation. Transportation and movement planning were mightily tested because of this defining characteristic. By 1 August 1918, when the Canadians began to move down to the Amiens sector for the coming offensive, there remained only six days to extend the logistics conduit from Boulogne. Currie did not inform Farmar, his QMG, about the requisite move of the Corps until 29 July, giving his logistics staff approximately 24 hours of planning before the move needed to commence.⁴³ In the course of compressed battle procedure, the divisional QMGs were left with a mere five days of advance notice:

The Corps Commander intentionally avoided a formal conference for the discussion of the actual operation until after the relief of the Corps in the line was completed... The instructions regarding the operation were transmitted to the C.R.A Brigade Commanders and A.A. Q.M.G. for the first time at the Divisional Commander's Conference August 1st 1918.⁴⁴

Furthermore, the Corps would need to move and prepare for battle in an unfamiliar sector under complicated conditions. They were assigned only two main supply routes, the Amiens-Roye road and the Amiens-Villers Bretonneux. These two roads could only be used at night:

The Division is now in the first stage of a concentration march preparatory to assembling in battle positions. Surprise is to be the essence of the operation and therefore, all movement is to be restricted to the cover of darkness... transport is to be parked under trees and troops not to be allowed to move about...⁴⁵

⁴³ Schreiber, *Shock Army...*, 38.

⁴⁴ 1st Canadian Division War Diary, Report on Amiens Operations August 8 to 20th Inclusive, 1918, RG9, Series III-d-2. Canadian War Diaries.

⁴⁵ 4th Canadian Division, 3 August 1918. RG9, Series III-d-2. Canadian War Diaries.

To complicate matters, the sector now occupied by the Corps had been a French sector, bereft of the compatible commodity points to sustain a British formation.⁴⁶ This placement in a new, non-British sector meant that the logistics chain would have to haul from refilling points further afield. Heightened distances as well as extended LOCs over darkness strained the system and frustrated General Farmar as demonstrated in his wry after-action report:

While it is recognized that the whole success of the operations was due to the secrecy under which the operations were arranged, it is considered that the responsible staff officers could have been taken into confidence, with considerable benefit to all concerned...⁴⁷

The sustainment test was an enormous one. However, the Canadian Corps logistics structure was resilient enough to meet the challenge as Schreiber observes:

The transport personnel of the CASC had overcome a tremendously overburdened transport system in order to provide the artillery with ample ammunition: 291,000 rounds of all calibers with a total weight of 7,065 tons, had been trucked into position in a period of just over three days...⁴⁸

Clearly the Canadian Corps possessed an exemplary logistic capability that made the administrative and tactical operations at Amiens possible. The salient features of the Canada's little 'Shock Army': robust structure, enhanced mobility, and guarded affiliation all contributed to this ability and must be further explored.

Perhaps the most obvious and telling key to the sustainment success of the Canadian Corps was size. The Corps was a very large one, equating in strength to a small British Army. Whereas a British division consisted of approximately 15,000

⁴⁶ Schreiber, *Shock Army...*, 37.

⁴⁷ "Notes on Amiens Operations, Canadian Corps 'Q', dated 14 September, 1918," RG9, Series III-d-2. Canadian War Diaries, p. 2.

⁴⁸ Schreiber, *Shock Army...*, 39.

soldiers, a Canadian division had in excess of 21,000.⁴⁹ General Currie had resisted the move to triangularization, which had been implemented in the rest of the BEF in January 1918.⁵⁰ The attrition of allied manpower throughout 1916 and 1917 had left the British Divisions in the field, “hard pressed for men.”⁵¹ The solution was to reduce each brigade by one battalion so that at least on paper, the BEF could field the same number of divisions. Triangularization was significant as it eroded, somewhat the logistic resiliency of Imperial formations by thinning out human resources and equipment. Currie’s philosophy with regards to this thinning out process was in complete contrast to the Imperial plan:

The proposal was also put up to the Canadians, with the suggestion that the battalions thus freed might serve as the basis for two new divisions. General Currie, however, preferred to retain the old organization. He took the view that four strong divisions would be more effective than six weak ones.⁵²

Additionally, Currie had seized the opportunity of the break up of the Fifth Canadian Division to over-man the four, blooded divisions of the Canadian Corps. Beefing up the four divisions rather than stretching to field a fifth increased the punch of a formation already infused with structural redundancy.⁵³ The Canadian Corps Headquarters also dwarfed its British counterparts in terms of logistics functionality:

Two additional Mechanical Transport Companies gave it approximately 100 more trucks than a British Corps, thereby facilitating greater inherent mobility...The Corps maintenance organization was similarly much larger than anything other Imperial Corps had to work with...A British Corps possessed only one Medium Ordnance Mobile Workshop, while the Canadian Corps had two...the Canadian Corps had a distinct quantitative advantage over its British counterpart.⁵⁴

⁴⁹ Schreiber, *Shock Army...*, 21.

⁵⁰ Schreiber, *Shock Army...*, 21.

⁵¹ G.F.G. Stanley, *Canada’s Soldiers...*, 328.

⁵² *Ibid*, 329. It has been said that quantity has a quality all its own. This tongue-in-cheek axiom would appear to apply to the Canadian Corps.

⁵³ English, *Lament For an Army...*, 17.

⁵⁴ Schreiber, *Shock Army...*, 22.

This meant that in terms of general transport and repair the Canadian Corps had more CSS capability. There was a measure of both combat and logistics resiliency built into the Corps that enabled it to absorb the sustainment demands of the Hundred Days.

Canadian Corps staff planners recognized that greater freedom of action in the area of general transport was required. They had discovered through 1917 the unquenchable thirst of the industrialized battlefield for empty trucks. In an attempt to increase lift within available resources, Corps logistics structures were re-organized on 14 April 1918 with the intent of gaining more task vehicles from a more efficient structure. The Canadian Corps Supply Column and the Canadian Corps Ammunition Park--two distinct Corps level units-- were fused into the Headquarters Canadian Corps Mechanical Transport (MT) Column. This new unit acted as the headquarters for five new subordinate MT companies. Similar to the amalgamation at their Column Headquarters, the respective Divisional Ammunition Parks and Divisional Supply Columns supporting each of the four divisions were amalgamated to form four new divisional MT companies.⁵⁵ The MT companies were responsible to act as the extension of the railway and deliver combat supplies forward to the organic trains of their respective divisions. In this manner, the Corps planners achieved a pooling of some precious excess lift.⁵⁶ The intent of generating more general lift capability was valid, but in practice it had a negative effect from the divisional perspective at Amiens:

All things considered, it cannot be said that the Mechanical Transport worked efficiently. From the ammunition point of view it was a constant source of worry...The Mechanical Transport was recently re-organized. The organization

⁵⁵ The resulting new Corps units were 1,2, 3 and 4 Division MT Company as well as HQ MT Company for the support of Corps Troops.

⁵⁶ Warren, *Wait for the Waggon...*, 110.

formerly consisted of 1 Divisional Supply Column and 1 Ammunition Sub-Park. These were merged into the present [1st Division] M.T. Coy—excellent no doubt on the grounds of economy but very detrimental... We certainly found it did not work during our advance...⁵⁷

As previously noted, the Canadian Corps, the small national army within the BEF, had more MT companies than other Corps. Furthermore, the Canadian Corps benefited from the fact that nearly all corps level transport was motorized, a quality not shared by other Imperial formations.⁵⁸ Even with qualitative and quantitative advantages, the divisional QMGs found that their Corps was still short of transport. It would appear that the importance of sufficient general transport to the modern offensive is difficult to overstate. The Canadian Corps logisticians appreciated the importance of general lift. They knew in 1918 that motorized flexibility and empty task vehicles were critical to sustain a more fluid open style of warfare.⁵⁹ Even though the effort to generate more general lift capability fell short, the initiative was significant as it indicated vibrant CSS experimentation based on thought and experience.

Any sort of offensive breakout on the Western Front was a new challenge to the senior leadership of the BEF. Solving the sustainment issue engendered some creative thinking. The Amiens planners were fully cognizant that survivability of CSS assets was also a large quotient in realizing offensive success. At Amiens, some Mark IV tanks were used in a supply role as recorded in the War Diary of the 1st Canadian Division: “In order to supply the troops during the attack of August 8th and 9th, it was proposed to allot the Division six “Mark V” (sic) Supply Tanks capable of carrying 8 tons each and going

⁵⁷ 1st Canadian Division War Diary, Report on Amiens Operations August 8 to 20th Inclusive, RG9, Series III-d-2. Canadian War Diaries.

⁵⁸ Schreiber, *Shock Army...*, 38.

⁵⁹ *Ibid*, 31.

at a rate of 2 miles per hour.”⁶⁰ Six supply tanks were assigned to each lead division and meticulous load lists were developed for them. As noted by the skeptical tone of the Divisional QMG, the true contribution of the supply tanks at Amiens is probably restricted to the domain of the psychological:

They were of old Mark IV Type, very slow traveling, and of limited carrying capacity. From the purely carrying point of view, it is considered that a well organized and efficient Pack Mule Coy, or a Tump line party could have given them a start and then arrived several hours before them...If tanks are to be employed again for this purpose, it is strongly recommended that the Mark V be used. They are much speedier...⁶¹

Even though the low maximum speed and limited payload of the Mark IV tank eroded its positive contribution, its use in a pure sustainment role is profound. Logistics planners groping to sustain the first glimmers of offensive success in the modern era were dead accurate with their deductions. Increased mobility, speed and survivability were essential characteristics for the logistics unit on the modern battlefield. Canadian sustainment thinkers dealing with an asymmetric and non-contiguous battlefield could profit from an examination of these nascent attempts to increase logistics survivability.

Finally, there was a great deal of effort on the part of General Currie and the Canadian Government to keep the Canadian Corps together as a fighting formation.⁶² This desire served to develop cohesion and affiliation among the various staffs and units of the formation. British Corps, in contrast, did not retain divisions.⁶³ They were shuffled in and out of different Corps regularly. The ability of the Canadian Corps to retain its subordinate formations not only led to cohesion and ease of planning but also

⁶⁰1st Canadian Division War Diary, Report on Amiens Operations August 8 to 20th Inclusive. RG9, Series III-d-2. Canadian War Diaries, 19.

⁶¹ *Ibid*, 18.

⁶² Schreiber, *Shock Army...*, 26. See also English, *Lament for an Army...*, 16, for comments on sterling Government support for the Canadian Corps and the benefit of maintaining the Corps as one.

⁶³ McCulloch, *Study in Operational Command...*, 56.

the often-underrated logistics principle of affiliation. Affiliation can seem trivial at first glance; however it leads to trust and efficiency when the friction of combat raises the spectre of logistics doubt in the mind of the fighting echelon. Like old hockey line mates who, through familiarity and respect, can take their level of play to a higher level, affiliation or a sense of team enabled the Canadian Corps to generate combat power with finesse. Ian McCulloch juxtaposes the advantages of Canadian affiliation against the more modular British concept as follows:

The homogeneity of the Canadian divisions, ‘was a great advantage...they always operated together under a corps commander and staff whom they could trust and whose methods and abilities they knew and understood. In contrast, British divisions moved about from one corps to another, and sometimes suffered from misunderstandings arising from different...administrative practices in the different corps....’⁶⁴

There are fewer questions to ask between staffs and between line commanders in a formation that is well affiliated. Similarly, there are fewer points of clarification, fewer prompts engendered by unfamiliarity with technique. As result, battle procedure times can be compressed and the physical act of sustainment is conducted more effectively between units that know and trust each other implicitly. The rarified environment of combat binds the supported to the supporting in a fashion that cannot be approached by any number of meetings and conferences and the Canadians were sage to maximize this benefit. Close affiliation, in tandem with redundancy of both structure and mobility assets were invaluable components in sustaining the Canadian Corps through the Hundred Days. It is difficult to dispute that Canada’s ‘pocket’ Army was part of the cutting edge of CSS innovation in 1918. The unavoidable question remains, “What happened?”

⁶⁴ *Ibid*, 56.

Doctrinal Vacuum—Canadian Army Sustainment 1918-2001

After World War I, Canada's citizen army returned to its peacetime posture and many of its logistics units were disbanded.⁶⁵ Typical of a cadre-based army; training between the world wars was focused on small unit exercises. A small standing force has difficulty advancing any precepts let alone the doctrine that deals with supporting large formations of men and equipment. Evolutionary change became the preferred methodology for Canadian sustainment development. The incremental changes since 1918 have been predominantly generated by two agents: technological innovation and the requirement to generate forces for operations. A survey of the minor changes in sustainment doctrine as a result of World War II and Korea will demonstrate that the logistics doctrine practiced up to the unification of the Canadian Forces in 1968 changed but marginally. Furthermore reviews of the development of the service battalion in the early sixties and the clumsy attempts to rekindle divisional support doctrine through the *RV* exercises of 1981-1992 will confirm that the TTPs of 1918 remained intact after unification as well.

Mechanization

The permanent logistics units of the Canadian Army post World War I were not able to work on large formation collective training but they were able to address the technology gap. Specifically, the complete mechanization of logistics units proved to be the next logical step in support evolution. D.J. Goodspeed accurately grasped the need for mechanization to realize the full potential of World War I concepts:

This problem of maintaining the momentum of an attack was never entirely solved in the First World War, for the technological difficulties were too great.

⁶⁵ Warren, *Wait for the Waggon...*, 119 *et passim*.

The key to its solution, of course, was the internal combustion engine, which made possible the mechanization of transport and support services.⁶⁶

The truck had shown its possibilities in the World War I, unshackling large armies from the inflexibility of fixed rail lines.⁶⁷ Logistics leaders had realized that supporting units had to have the same level of mobility as the fighting echelons as well as the greatest possible speed to underwrite offensive flexibility. They now sought to enhance their branches along these lines. For example, Lieutenant-Colonel Pat Hennessey, an RCASC Officer who had served extensively in World War I proved to be a driving force for the mechanization of Canadian logistics units. Hennessey played a prominent role in the reorganization and development of the replenishment system between the wars.⁶⁸ Canada could not afford to purchase mechanical logistics vehicles, however, Hennessey kept a close eye on developments in the United Kingdom. He ensured that the technological strides being made in the British Army Service Corps were embedded in the training of the RCASC. Despite contributions like Hennessey's and the supplanting of the horse by the motorized task vehicle, there was no need of further doctrinal refinement between the wars.

World War II and Korea—The Train that Farmer Wanted

Canadian sustainment doctrine endured the crucible of World War II with little evolution. World War II made possible the complete mechanization of CSS units that

⁶⁶ D.J. Goodspeed, *The Road Past Vimy. The Canadian Corps 1914-1918* (Toronto: Macmillan of Canada, 1969), 153.

⁶⁷ Major General Sir Julian Thompson, *The Lifeblood of War. Logistics in Armed Conflict* (London: Brassey's, 1991), 49.

⁶⁸ Warren, *Wait for the Waggon...*, 45. The spectacular career of Colonel Pat Hennessey would furnish abundant material for a separate book. Hennessey and his accomplishments in logistics modernization are commemorated on the Simonds Theatre Wall of Honour at the Canadian Forces College in Toronto as well as the former RCASC Training School at CFB Borden, Ontario. Colonel Hennessey was killed in action in Hong Kong in 1940.

Hennessey had monitored; however, this technological advent did not require a large evolution in TTPs. Arnold Warren confirms the minute evolution in doctrine in his measure of the World War II sustainment apparatus:

It is obvious, also, that they studied another aspect of Great War S and T [supply and transport] establishments—the Divisional Train. It corresponded to the Divisional Column of 1939 to 1941...⁶⁹

In other words, the divisional column of World War II looked a great deal like its predecessor, the divisional train. The only change of significance to this familiar support unit occurred in January 1943 when the RCASC moved away from single commodity companies.⁷⁰ From 1915 through to 1943, supplies were held in homogeneous commodity companies. Beginning in 1943 RCASC companies were composite units that could provide the entire family of combat supplies and no longer just one single commodity. This composite organization of transport companies provided a much greater degree of flexibility in responding to changing demands at the front. The change also offered greater dispersion of single commodities and therefore increased survivability. The shift from single commodity to multi-commodity units was a sound and flexible concept that has been retained in the support constructs of 2004.

The next major agent of change for the Canadian Army was the Korea conflict, which began on 25 June 1950.⁷¹ The first United Nations collective effort resulted in a determined “police action” to restore South Korean sovereignty. Five years after World War II, the Canadian Army was at a low ebb having only one brigade under arms.”⁷² The government’s immediate reaction was to announce the recruitment of a special brigade to

⁶⁹ Ibid, 203.

⁷⁰ Ibid, 201-203.

⁷¹ Patricia Giesler, *Valour Remembered* (Ottawa: Supply and Services Canada, 1995), 2.

⁷² Stanley, *Canada’s Soldiers...*, 399.

be used overseas.⁷³ This land contribution to the UN forces in Korea was the Canadian Army Special Force, which eventually consisted of 25th Canadian Infantry Brigade and a commensurate dollop of CSS elements. These CSS assets were: 54 Transport Company, RCASC, 25 Infantry Brigade Ordnance Company, RCOC and 191 Infantry Workshop, RCEME. The logistics units sustained Canadian elements operating independently in Korea until the stand up of the Commonwealth Division in July 1951.⁷⁴ Once the Commonwealth Division became a reality, 54 Transport Company became part of the Commonwealth Divisional Column along with two Royal Army Service Corps Companies, 25 Brigade Ordnance Company was welded to its British counterparts to become the 1st Commonwealth Division Ordnance Field Park and 191 Infantry Workshop became integral to the 1st Commonwealth Division Recovery Company. In this capacity, the Canadian units provided splendid support. 54 Transport was given the task of hauling all the ammunition for the Commonwealth Division and the RCEME workshop conducted some 22,000 field repairs over the course of the war.

In terms of experience for unit rotation and CSS interoperability, Korea was extremely beneficial. Canadian units were rotated out of theatre after a year-long tour of duty thereby giving the army experience in rotating CSS units in an operational theatre. Major Bob Laughton, the Commanding Officer of 54 Transport Company, wrote to the Director of Supplies and Transport at Army Headquarters in Canada in anticipation of receiving his replacement in Korea: “I have set my trap for that ‘old silver fox’ [Major] Joe Dolan. When he arrives everything will be in shape and I expect to conduct the

⁷³ *Ibid*, 399.

⁷⁴ John Conrad, *Officium Super Omnia. The Official History of 1 Service Battalion* (Calgary: Unit Fund of 1 Service Battalion, 1992), 52.

fastest turnover in the recorded history of the Corps...⁷⁵ Speed would not be the only defining characteristic. Major Laughton would have been acutely aware that a handover of responsibilities in a combined divisional column was noteworthy from a historical standpoint. Furthermore, in terms of multi-national logistics, Korea was indeed a rich vein for the ABCA and NATO standardization programs. Providing support in a combined division nested inside a larger UN force could only have had a catalytic effect on logistics standardization and interoperability in the Commonwealth Armies.

Notwithstanding the valuable experience gained in Korea, the sustainment practices of Canadian units were identical to the divisional level support furnished in World Wars I and II. There was no need to alter the TTPs that had worked so well in combat only five years earlier. Equipment and tactics had not changed dramatically and the familiar divisional support structure suited the Korean conflict. Replenishment and services flowed forward from Pusan to divisional refilling points just as they had from Boulogne in 1918. Notwithstanding the work required to be interoperable, the battlefield was still linear, recognizable and compatible with Canadian sustainment doctrine.

The Good, the Bad and the Flexible—Development of the Service Battalion

After the Korean War, the field force moved away from the division as a fundamental structure and polarized around the brigade group concept. By the late 1950s, the Canadian Army began to detect fissures in the logistics architecture supporting its brigade groups. The biggest problem was one of coordination among the various units supporting the brigade group as one CSS officer observed:

The independent corps units such as the RCASC Transport Company, the RCOC Ordnance Field Park, the RCEME Field Workshop, and the RCAPC Field Cash

⁷⁵ Field post letter from Major Laughton to Colonel J.L. Sparling, Director General Supplies and Transport, 15 February, 1952. 1 Service Battalion Archives, Edmonton.

Office were approaching the support task in an uncoordinated and sometimes wasteful manner...The “administrative tail” was becoming too large to be wagged.⁷⁶

The various units that had served Canadian divisions so well in three wars had become a knotted, uncoordinated ball in the brigade rear area. The issue prompted Major General Geoff Walsh, the General Officer Commanding Western Area to tinker with his logistics assets. General Walsh proposed the Logistics Battalion trials of the early 1960s in Wainwright, Alberta as the means with which to forge a more effective structure.⁷⁷ The trials, which entailed the pooling of the distinct CSS corps into a Logistics Battalion, became Walsh’s ‘pet project’.⁷⁸ Like the fine-tuning of sustainment in the Canadian Corps in 1917, Canadian CSS was once more to profit from undivided command attention. The Logistics Battalion was formed twice during the Western Area concentrations in 1960 and 1961. The success of the Walsh trials was startling. The new battalion almost immediately proved to be much greater than the sum of its parts.⁷⁹ Not only did the Logistics Battalions give the brigade a focal point for all its sustainment needs, but it also facilitated the coordination of rear area security and damage control in the nuclear era. Before the Logistics Battalion, the brigade headquarters had to deal with each supporting unit in turn. Now, direction to one large unit would effectively control the entire rear area. This control function was an additional benefit to streamlining the process for demanding support.⁸⁰ The ‘pet project’ of the field commander received deep praise from senior logistics personnel who participated in it:

⁷⁶ LCol Pospisil, article in *The Round Up*, 1976. From the unit scrapbooks of 1 Service Battalion, Edmonton.

⁷⁷ Demi-official letter from LCol Pospisil to LCol Strain dated 1992, 1.

⁷⁸ *Ibid*, 1.

⁷⁹ *The Camp Gagetown Gazette*, 1963.

⁸⁰ Christopher Thurrott, “Is it Time to Purge the Service Battalion from the Order of Battle?” *The Service Battalion Newsletter* (Fall, 1994): 17.

Two things registered in my mind from the Logistics Battalion trials; the need for a single commander to “sort out” those rebellious units in the Brigade Administrative Area (BAA) so they could get on with the job; and the need for something called a Log Ops Centre—a single agency in the BAA to which arms units could go when they needed support.⁸¹

The trials led directly to the Defence Minister’s announcement of a more concrete experiment, a standing Experimental Service Battalion in Gagetown, New Brunswick: “During 1963, the army will test a new supply concept...It is designed to provide more efficient support and greater flexibility to fighting units in the widely dispersed and mobile battlefield envisioned in nuclear war.”⁸² The experimental battalion confirmed the positive observations made in Wainwright. The unit’s functionality was brilliantly summed up by the Gagetown newspaper in 1963: “You’d walk up and down a lot of main streets in this country to find all of the services and commodities provided by the new [Service] Battalion.”⁸³ Eventually the term ‘Experimental’ was dropped from the name and the unit became 3 Service Battalion. In 1968, four additional Regular Force Service Battalions were established on a basis of one for each of the brigade groups.

The structural regrouping of logistics companies into a service battalion represented a tremendous advance. However, although the structure of the sustainment apparatus had changed, it still resembled its ancestors in the divisional trains in terms of TTPs. The service battalion initiative, at its core, was structural. It was not a battalion replete with doctrinal innovation. For example, the execution of replenishment operations in a Service Battalion *Field Operating Procedures Manual* (SOPs) in 2003 is

⁸¹ LCol Pospisil, *The Round Up* 19 February 1976. From the unit scrapbooks of 1 Service Battalion, Edmonton.

⁸² The Honourable Douglas S. Harkness, Minister of Defence. From an official statement released 9 January 1963. Unit Scrapbooks of 1 Service Battalion, Edmonton.

⁸³ Camp Gagetown Gazette, 1963.

identical to procedures outlined in a 1962 publication, *The RCASC in the Field* almost to the letter.⁸⁴ Furthermore, these same procedures were well established in the wagon trains of the Canadian divisions in 1918. The dumping program innovated in 1916 sufficiently illustrates the point. Both the contemporary SOPs and the 1962 RCASC manual retain the concept of dumping:

The system of road transport may be organized in such a way that each vehicle may be operated for the maximum hours per day consistent with minimum maintenance requirements and driver availability...Prerequisites to a successful continuous running programme are: two or more drivers per vehicle...⁸⁵

This is but one example of the didactic text in current manuals that is replete with the echoes of the Somme. The near verbatim descriptions of the dumping technique in both the 1962 and 2003 SOPs confirms that while the service battalions themselves were clever innovations, they still practiced an antiquated doctrine.

Notwithstanding the brigade group service battalion's dated TTPs, the significance of its development cannot be overstated. Here was a crystalline example of foresight, thought, and experimentation. Supported by the active interest of a commander, army logisticians from eleven different service branches took a vision of the future battlefield and tied it to existing sustainment practices. They next invested the time and effort to test the concept over two summer concentrations and finally established a standing experimental unit to complete the study. It was the last time such an innovative and empirical approach would be used to create a Canadian CSS solution. In effect, the Logistics Battalion trials were the last true examples of logistics

⁸⁴ Canadian Army Manual of Training, *RCASC in the Field* (Ottawa: Queen's Printer, 1962), 151 and 2 Service Battalion *Field Standing Operating Procedures* dated 10 March 2003, 11/13.

⁸⁵ *Ibid*, 72. Sub-units of the battalion could be broken apart and projected forward to support offensive success. With this flexibility the battalions in Germany, Petawawa, Calgary and Valcartier consistently devised local solutions to tactical problems. Despite local effectiveness, such practices do not engender the institutional learning and standardization so quintessential to relevant doctrine. The extremely flexible nature of the service battalion ironically curbed tactical CSS innovation at the institutional level.

experimentation. Forward of 1968, advances in logistics doctrine and TTPs would be negligible even though the *RV* Exercise series would demonstrate the old doctrine to be largely irrelevant to all things Canadian.

Rendez Vous (RV) Exercises

The further the army marched from Korea, the more rusty became its application of recognized CSS doctrine. It had become axiomatic that each of Canada's four standing brigades would concentrate and exercise as a formation once each year. Yet, by 1980, the Canadian Army had not conducted the exercise of a divisional formation since 1956.⁸⁶ The Commander of Mobile Command, Lieutenant-General G.G. Paradis, was well aware of the importance of divisional level training:

A brigade in the field is not an army. In the event of Canadian Forces being involved in an actual war, it would be necessary for all brigades to work as one divisional formation whose entire activity would be commanded by one divisional headquarters.⁸⁷

Having identified a training gap, a divisional exercise was planned for the summer of 1981 in Gagetown, New Brunswick. This first *RV* brought together the three Canadian-based brigades to form the FMC Division in the largest Canadian exercise since World War II.⁸⁸ Today, the Post Exercise Report of *RV 81* lays neglected in the Directorate of History and Heritage (DHH). It has some haunting words for logistics leaders:

The administrative support concept...revolved around the RSG and the RP. However, where the shortage of second line support caused by the absence of a Divisional Troop Service battalion and the dual-hatting within Service Battalions is concerned, there is a problem...It becomes apparent that the current combat service support system is extremely suspect...⁸⁹

⁸⁶John Martinson, *We Stand On Guard. An Illustrated History of the Canadian Army* (Montreal: Ovale Publications, 1992), 438.

⁸⁷Marsha Scriber, *Transitions. Commemorating Camp Wainwright's 50th Anniversary* (Winnipeg: Jostens, 1990), 91.

⁸⁸*Ibid*, 92.

⁸⁹*Rendez Vous 81* Post Exercise Report. Directorate of History and Heritage (hereafter DHH).

The logistics concept for the exercise welded the new service battalions into a divisional support structure. However only some salient attributes and terms of proper divisional support doctrine were applied. For example, the RP or replenishment point referred to above is identical to the refilling points of World War I. Conceptually, these corps-generated supply points are the nodes from which divisions draw materiel. The support missing for the divisional troops in *RV 81* equated to the mechanized version of the Hundred Days' divisional trains.⁹⁰ In other words, beyond support to its fighting brigades, the FMC Division had little in its logistics arsenal for non-brigade or divisional troops. In adapting the service battalions to support the FMC division, the sustainment of divisional soldiers was ignored. Not only were the logistics planners not enhancing logistics doctrine, they were applying it badly. Worse, the lessons learned were not formally captured beyond the cohort of officers who participated in the exercise. Even so, the first *RV* was successful and tremendously significant to the Army. Lieutenant-General Charles Belzile, the Commander of Mobile Command during the exercise, summed up quite succinctly in his covering letter for the post exercise report:

For the first time in 17 years the Army was able to field a division. It was obvious that there were significant shortcomings in our peace time (sic) structure and in the capabilities of the FMC Division...It was perceived that the field army, regardless of how shaky, was once more on its feet and steadying up.⁹¹

⁹⁰ The elements to support divisional troops are now ensconced in the divisional services group (DISGP) of the current Army CSS doctrine. As mentioned above, there is very little to choose between the 1918 divisional wagon train and the 2003 DISGP.

⁹¹ *Rendez Vous 81* Post Exercise Report, DHH, page 2.

Over the course of successive *RV* exercises, the old doctrine was eventually recreated with somewhat better results.⁹² On *RV 89* a workable construct for divisional support was finally achieved by making functional companies out of the various companies of the service battalions and task organizing brigade support units to simulate the DISGP service battalions.⁹³ Only at this high water mark of divisional CSS application were the warts of an antiquated doctrine becoming visible. Christopher Thurrott recalls, “Experience during *RV 89* showed that the DISGP command and control structure did not permit visibility of all second line resources at Divisional Headquarters.”⁹⁴ On *RV 92*, the last of the *RVs*, the DISGP structure was abandoned. Ironing out the divisional wrinkles noted on *RV 89* was relegated to bar conversations and the odd journal article. In effect, the divisional support structure described in doctrine was only approximated once during the *RV* series. To enhance doctrine, to make it relevant, repetition, observation and experimentation must thrive. With only one crude replication in 1989, the Canadian Army was never able to advance the divisional train. The chances of moving doctrinal precepts beyond Mons in such a scenario were, at best, negligible.

Sustainment Structure Over Doctrine

Two conditions have facilitated the stagnation of logistics thought in Canada. The first was a pre-occupation with logistics structure that was rooted in a Canadian version of the 1912 prejudice against military logistics. The second condition is one of professional culture within the logistics community itself. The army has not been greatly

⁹² Thurrott, *Purge the Service Battalion...*, 17.

⁹³ For example the Maintenance Companies of 1 and 2 Service Battalions and 5ieme Battalion Du Service became 125 Maintenance Battalion, a functional battalion in the DISGP with support responsibilities to both brigades and divisional troops.

⁹⁴ Thurrott, *Purge the Service Battalion...*, 17.

interested in learning about its logistics past and doctrine development has been inadequately attempted by periodic committee. An examination of cultural failings in the army itself as well as the growing need for doctrinal changes in logistics will illustrate that CSS doctrine is both antiquated and improperly based today.

Senior army leaders during the Cold War emphasized the protection of combat arms units over all other functions. In fact, tribal interests were so acute an institutional ailment that they were even rampant inside the combat arms. In point of fact Douglas Bland observes that: "...the army resisted attempts to change infantry units into antitank units in the mid 1960s because that might have advanced artillery interests over their own."⁹⁵ Bland illustrates the pecking order succinctly:

On another level, all the European based formations...were fatally weak in logistic support. Yet throughout the history of commitment in Europe general officers resisted successfully most attempts to add logistics units to their organizations because that would have detracted from combat establishments.⁹⁶

In addition to this protectionist approach was a poor opinion of CSS among the warrior class. The low regard commanders held for logistics is nowhere more prominently displayed than General Dextraze's cavalier handling of the logistics part of the Canadian commitment to Norway:

The same reaction occurred in the CAST commitment designed for deployment to Norway. In 1976 the CDS, Dextraze, arbitrarily reduced the logistic component of the force from 1,500 to 150 simply by removing a zero from the established logistic unit number.⁹⁷

This unrealistic dismissal of the sustainment bill highlights exactly where CSS stood among senior leaders of the army, a stark contrast to Douglas Haig's rebooting of his

⁹⁵Douglas L. Bland, *Chiefs of Defence. Government and the Unified Command of the Canadian Armed Forces* (Toronto: Brown Book Company, 1995), 219.

⁹⁶*Ibid*, 219.

⁹⁷*Ibid*, 219.

replenishment system in 1916. As evidenced in the years of preparation for the Hundred Days, logistics requires command interest and support to develop effectively. The tribal culture that flourished in the Canadian Army not only afforded logistics little attention, but it took a proactive interest in marginalizing it. No professional soldier would ever dispute the primacy that the fighting forces must command in an army. However, the relationship between act and sustain are left unbalanced at the commander's peril.

The series of budget and resource reductions that began during the Trudeau era and ended with the large Force Reduction Plans of the Chretien Administration in the mid-1990s forced the Canadian Forces to find ways to tighten its belt.⁹⁸ Given the institutional bias that existed, the cuts came to the logistics tail before the combat arms. In this culture, logisticians were compelled to dwell on structural economy in order to preserve core capabilities in the field army. Against the tide of force reduction and budget constraint there was no time, resources or command interest to focus on doctrinal innovation. Structural fascination became the pale surrogate of logistics thought.

Additionally the aversion to self-reflection so prevalent among Canadian logisticians has not helped matters any. DHH and the National Archives of Canada have precious few documents pertaining to CSS units particularly since unification.⁹⁹ The documents that do exist rarely see the light of day. Van Creveld may hold part of the answer to this cultural bias:

It may be that this [logistics study] requires, not any great strategic genius but only plain hard work and cold calculation. While absolutely basic, this kind of calculation does not appeal to the imagination, which may be one reason why it is so often ignored by military historians.¹⁰⁰

⁹⁸ Gerald Porter, *In Retreat. The Canadian Forces in the Trudeau Years* (Toronto: Deneau and Greenberg, 1979), vii.

⁹⁹ 25th Anniversary letter from LCol Strain to all soldiers of 1 Service Battalion, June 1992.

¹⁰⁰ Van Creveld, *Supplying War...*, 1-2.

For most of the twentieth century, doctrine has been a secondary duty for Army staff officers who would do their best to forward doctrinal ideas at infrequent CSS doctrinal working groups. The process was far from robust as the doctrine work competed with the demands of everyday pressures. For example, the 1996 meeting of logistics doctrinal leaders was replete with an air of defeat and doctrinal helplessness:

The Americans expend considerable resources to review their doctrine and re-develop their principles and concepts approximately every four years. Canada cannot afford to do this. As a result, our (CSS) doctrine is outdated.¹⁰¹

Did the Doctrine Board actually believe that it could not afford to think? Obviously reflection on lessons learned and empirical data was not a way of life among logistics officers. In point of fact, the CSS working group did take minutes, as the notation above indicates, but it would appear that they have either been misplaced or merely not retained.¹⁰² This lack of familiarity with the whereabouts of doctrinal proceedings is emblematic of how poorly institutional learning has been in the CSS community and what little value was placed on honing doctrine. Creating new ways of supporting is hard work, work that can only be undertaken by an author with full understanding of the military challenges. Very few soldiers write and even fewer take the time to analyze.¹⁰³ This flawed culture among the logistics community has certainly contributed to the vacuum of CSS innovation.

The Need

¹⁰¹ Minutes of the CSS Doctrine Meeting Held At the St Hubert Officers' Mess, 0830 22 Jan 96.

¹⁰² LCol Morrow (current DAD 9) assisted the author with the search for the old minutes of these Boards. Thus far, the author has not found a single person at the Land Staff HQ who knows for sure where the minutes are filed or if they were even kept. The quote from the minutes at note 101 comes from papers collected by the author.

¹⁰³ From an editorial comment by Dr Chris Madsen Canadian Forces College from an early draft.

The affiliation between the service battalions and its resident brigade group was dissolved with the increased tempo on peacekeeping deployments in the early 1990s. Domestically, the service battalions were able to maximize affiliation, like the supporting structures within the 1918 Corps. A brigade group service battalion was very familiar with its brigade, to the point that individual units in the brigade would be supported by specific CSS platoons.¹⁰⁶ Even the 1994 White Paper provided for affiliation. The document tasked the Army to field a mechanized brigade group (the SABRE Brigade) as part of the Main Contingency Force.¹⁰⁷ The requisite support unit would be a brigade group service battalion, presumably the battalion affiliated with whichever brigade was tasked to form the nucleus of SABRE. The problem is that this level of land force commitment deploys by exception and virtually all logistics requirements during the peacekeeping era have been well below battalion strength. This meant that each time that an operation was mounted, the logistics component would be *ad hoc*, task organized for the specific mission. The lessons of affiliation so well learned in the Canadian Corps' homogeneity and effectively applied by the brigade group service battalions at home were difficult to carry over on deployed operations. The need for the evolution of a smaller logistics unit that could train, affiliate, and deploy intact was clear but neglected.

The *RV* series demonstrated to logisticians that the divisional structures they aspired to from 1981 to 1992 were neither achievable nor relevant to Canada's Army. The largest tweaking of the logistics structure since the advent of the service battalions occurred in a CSS 1996 restructure. The restructure did little to address the doctrinal gap.

¹⁰⁶ It is common practice in the operating procedures of most transportation companies within the service battalions to keep the same sub-units assigned to replenishing the same combat arms echelons to maximize the recognized benefits of affiliation, familiarity and trust.

¹⁰⁷ *The 1994 White Paper on National Defence* (Ottawa: Supply and Services Canada, 1994), 10 *et passim*.

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The Army Commander's vision in this restructure was: "LFC shall have, in a minimum of designated units, CSS soldiers who are adequately trained, equipped and ready to provide the full CSS requirements to meet our DPG tasks."¹⁰⁸ This restructure took the worst-case scenario imaginable for the Army, the simultaneous deployment of all its ^{se and} White Paper Commitments and calculated the number of CSS soldier required to do them.¹⁰⁹ As part of the process the brigade group service battalions were dismantled.

The requisite number of soldiers instead being organized i1194lo(se andgeneral d)Tj0.0071 Tc -0.0007 Tw 1

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problems of the *RV* series and no effect on future problems of a changing battlefield.

Despite some incremental lessons, the 1996 restructure was a colossal exercise in structure and form, embracing the same TTPs that General Farmar would have recognized at Amiens.

The present G4 of the Army recently summed up the problem of doctrinal need in the army logistics structure: “The challenge is to work through these limitations while shaping sound, yet visionary, plans for the future. This is where the CF is failing in its management of sustainment transformation. Simply put, there is no plan.”¹¹² Although this comment is aimed at the strategic level, it is an accurate depiction of where the army came from in the 1990s. Vision, ideas and experimentation were luxuries the army could ill afford in an era of budget reduction and command disinterest. And yet, without these ingredients, sustainment doctrine has become rhetorical and irrelevant. Canadian logistics doctrine, lacking a modern intellectual foundation, has become so much wind without rain.

The Non Contiguous Battlefield 2003 and Beyond

Against an erosion of CSS thought strategic thinkers have painted a disturbing picture of the future battlefield. Their vision signifies that the need for true doctrinal innovation has increased exponentially. Notwithstanding the similarity of visions between the United States’ Joint Staff and the Canadian Army Directorate of Strategic Concepts (DSC) the future battlefield presents Canada with an opportunity to again develop its own doctrine. The shape of things to come plays to Canadian strength. Recent changes like the addition of a Directorate of Army Doctrine (DAD), the

¹¹² Col Chuck Davies, *Sustainment Transformation. If You don’t know Where you are Going, Any Road will get You There*. Paper for the AMSC, Canadian Forces College 2003.

installation of an annual brigade-level training event and the command attention directed to sustainment in strategic guidance could re-establish Canada as a leader in CSS innovation.

Former US Marine Corps Commandant General Charles Krulak described future conflict as follows, “Future war is most likely not the son of Desert Storm; rather it will be the stepchild of Somalia and Chechnya.”¹¹³ DSC concurs with this observation:

Undeniably, it [future battle space] will be increasingly complex. Gone is the reassurance and safety of a well-known, predictable and easily templated enemy...Canada and its allies have been plunged into a chaotic and turbulent new era that is more ambiguous, uncertain and volatile.¹¹⁴

Specifically, DSC describes a future battle space composed of complex terrain, asymmetric threats and a non-linear nature.¹¹⁵ Complex terrain refers to the selection by the enemy of a battlefield that denies advantages of technology and force strength. More often than not this involves difficult fighting in built up areas and a significant challenge to army.¹¹⁶ Asymmetric threats are those that: “disrupt and distract... a normally superior opponent.”¹¹⁷ An asymmetric enemy threat seeks to accentuate their strengths and attack the weaknesses of friendly forces. As such, asymmetry poses a significant problem for logistics and LOCs. The non-contiguous battle space will entail pockets of conflict that embrace both the asymmetric threat and complex terrain. The combat arms will increasingly rely on agility, speed, manoeuvre and timely information to fight in this complex arena. These pockets or bubbles of combat or operations will require reliable sustainment. It is clear that the linear doctrine of telescoping large volumes of materiel

¹¹³ Director of Land Strategic Studies, *Future Force...*, 62.

¹¹⁴ *Ibid*, 62-63.

¹¹⁵ *Ibid*, 61 *et passim*.

¹¹⁶ *Ibid*, 65.

¹¹⁷ *Ibid*, 63.

forward is no longer valid. In the non-contiguous battle space there is no ‘forward’ and a term like ‘rear area’ is equally antiquated. This sort of battle space might be better served by breaking the “unit-to-unit” support that CSS units have always furnished. It might make better tactical sense to sustain areas, or secured “bubbles” in the battle space. Arms echelons would travel to these sustained areas with survivable and mobile vehicles in a manner that recalls Byng’s convoys in the Boer War. Such a practice would also reduce the length the lines of communication as well as reduce the vulnerable nature of CSS. Under the philosophy of manoeuvre warfare, logistics assets are critical vulnerabilities, vulnerabilities that must be shielded to the maximum extent possible.¹¹⁸ Not unlike the use of the supply tank at Amiens, DSC has observed that better protected logistic platforms will be required on the non-contiguous battlefield. CSS assets will need to be able to fight beyond their current capability to conduct a passive defence. The United States’ Joint Vision 2020 (JV 2020) corroborates much of the DSC vision. JV 2020 envisions a focused logistics system that gets around asymmetry through information dominance. Specifically, the fusion of logistics information with transportation technologies will enable sustainment to be provided directly to the warfighter.¹¹⁹ Additionally, JV 2020 seeks to reduce the logistic footprint of combat units, and to achieve a better balance between, “Just in Case” support and “Just in Time.”¹²⁰ The future battle space will have smaller but more lethal units operating in a non-contiguous manner. There will be no room for the large stockpile of material

¹¹⁸ B-GL-3000-001/FP-000 *Conduct of Land Operations-Operational Doctrine for the Canadian Army* (Kingston: Queen’s Printer, 1998), 24.

¹¹⁹ *Lieutenant-General John J Cusick, Focussed Logistics, A Joint Logistics Roadmap* (Washington: United States Armed Forces Joint Staff, 2003), i.

¹²⁰ *Ibid*, iii.

required by “Just in Case” logistics. Grounded ideological change and not merely structural tinkering is crucial.

When it comes to sustaining on the future battlefield, borrowing the logistics practices of other nations makes no sense. Canada has habitually borrowed US doctrine without any further investment of thought.¹²¹ This entails taking a US Army publication and adopting it entirely as the Canadian way of doing business. When it comes to devising support doctrine for the non-contiguous battlefield, the Canadian Army finds itself uniquely poised, replete with experience and expertise. The army has been supporting in an asymmetric environment for nearly 60 years. From operations in the Medak Pocket to the supervision of free and fair elections in Khmer Rouge-dominated Cambodia, the Canadian Army was immersed in the challenges of the “Three Block War” long before the US Marine Corps coined the term. Additionally, what knowledge Canada lacks about divisional and corps operations it makes up for in its battle group and brigade expertise. Lack of large formation expertise may not be an impediment to solving the future challenge. JV 2020 foresees smaller fighting units of increased lethality fighting in difficult terrain and asymmetric environments. As such, the Canadian Army should be well placed to make the adjustment in the manner we fight and sustain. Given the strengths and experience of its Army, Canada should be the western leader in cracking this sustainment problem.

The Canadian Army has taken a number of positive steps in the past two years that will help meet the challenges of sustaining in 2020 and rejuvenating logistics thinking. The institution seeks to change how it fights in the Army of Tomorrow. This

¹²¹ Conversation with the present DAD 9 revealed that DAD does not even put a Canadian cover on the US manuals now. Even aesthetic Canadianization has been discontinued.

change calls for increased emphasis on the sense and sustain operational functions.¹²² This more robust logistics capability will bring a measure of balance and logistics redundancy to the army that echoes the logistics extras of the 1918 Canadian Corps. Additionally, at a recent strategic guidance meeting the present Chief of the Land Staff assigned the development of all operational functions to senior line commanders. These commanders are to form centres of excellence for their assigned operational function. Sustainment will now have its own champion in the General Officer Commanding Land Force Western Area.¹²³ This a significant step forward as the greatest innovations in sustainment have been led by war fighters from Currie and Byng in the Canadian Corps to Major General Walsh and his fascination with the Logistics Battalion trials. As in the aftermath of the Somme, Canadian CSS development once again has the undivided attention of the warrior.

As part of the army initiative to formalize its doctrine and training development in a manner similar to the United States Army TRADOC, the Directorate of Army Doctrine (DAD) was established in Kingston in 1997. The sustainment component of this Directorate, DAD 9, formally replaced the listless Army CSS Doctrine Board. Logistics doctrine now has the complete attention of a small, unencumbered group of officers. DAD 9 has published its keystone manual, CFP 300-4 *Sustainment*, as well as its subordinate replenishment manual. Even though the new books are far from revolutionary in concept and any QMG from the 1918 Canadian Corps would recognize the structure and techniques they describe, they serve notice that the tools for writing new

¹²²Commander Land Force Command, *Advancing with a Purpose...*, 8-9.

¹²³Chief of the Land Staff Strategic Conference Fall 2003 as briefed to the author by an attendee.

doctrine exist¹²⁴ Furthermore, the linkages between organizations like DAD 9, the Joint Level sustainment writers on the J-4 staff and the Army Lesson Learned Centre (ALLC) have not yet been formalized. For doctrine to become relevant, DAD 9 must read and ruminate on every item related to CSS that passes through the ALLC. To date, sharing of information with the ALLC has been by exception and the personal initiative of individual doctrine writers. Despite the dated content of its new manuals and the lack of necessary linkages, the establishment of DAD 9 as a permanent cell to develop logistics doctrine is a tremendous advance. If the immense potential of the organization can be fully developed, the dividends could well surpass current expectations for the production of Canadian logistics doctrine.

The Brigade Training Event (BTE) conducted in 2003 was the largest Canadian Army exercise since the end of the *RV* series in 1992. In many ways BTE 03 was analogous to *RV* 81 except that in the case of the latter, the army was getting back to division level training after a seventeen-year hiatus. The BTE, in contrast, was a return to brigade level training after a ten-year break. In the busy operational period from 1993 to 2003, the army had neither the time nor resources to run any exercises above the battle group level.¹²⁵ To find resources for the BTE, money for preparing army commitments like Operations Palladium (Bosnia) and Athena (Afghanistan), was combined to make one large exercise instead of two smaller ones conducted in isolation. The financial pooling was not without risk as the resulting exercise represented 25% of the army's total

¹²⁴ These early manuals were predominantly focused on tying the 1918 doctrine to the structural changes of the 1996 CSS restructure.

¹²⁵ A battle group is a battalion-sized unit that comprises a blend of combat and supporting arms. It is commanded by a Lieutenant-Colonel.

training budget for 2003.¹²⁶ The BTE was highly successful and it has become an annual reality in the army training calendar serving as the summit operational readiness activity for army units about to deploy on operations. The exercise will be conducted at a new state of the art facility, the Canadian Manoeuvre Training Centre (CMTC) that has been established at Wainwright. Besides capping the deployment training cycle, the annual BTE can be used by doctrine writers as a fulcrum for testing new ideas and putting old doctrine to the test. If the DAD 9 writers are properly involved, the BTE can develop into the laboratory for solving the logistics puzzles of current operations as well as looking forward to the solution of the non-contiguous battlefield. In the long gap from *RV 92* to BTE 03 there was no vehicle for experimentation and without trial and revision of thought CSS doctrine had decayed. Sustainment can once again benefit from annual stimulation and evaluation of TTPs. It was in Wainwright where the most significant advance in CSS doctrine since 1918 occurred in the crafting of the service battalions. There is a real chance that it could be that way again. The BTE affords an opportunity for experience and experimentation to once again breathe life into logistics practices, as was the case prior to the Hundred Days offensive.

Conclusion

Logistics innovation since the close of World War I has been rare in Canada. While the Canadian Army revised and discussed its logistics structures repeatedly over the years, TTPs have stagnated in a vacuum of thought. The Canadian Army historian Colonel C.P. Stacey who stated that, “creation of the Canadian Corps was the greatest thing Canada had ever done,” probably would agree that the Canadian Army’s greatest

¹²⁶ From the BTE preparation files at Land Forces Central Area Headquarters in Toronto as well as DHH.

logistic achievements to date came in the sustainment of that Corps, particularly during the Hundred Days.¹²⁷ The historical record shows that Canadians were once among the very best in terms of developing sustainment practices. There are four central reasons for the Canadian Corps' logistic prowess that suggest that doctrinal success is not beyond Canada.

First, field commanders in and around the Corps were engaged and interested in their logistics. As early as 1916, they noticed defects in the sustainment structures at both army group and corps level. Through strength of personality, they effected change in logistic practices even though their standing doctrine of the day gave "tacit approval of commanders disassociating themselves from administration."¹²⁸ At Haig's insistence, the strategic sustainment structure was fully re-organized in a logical manner that could provide the correct volumes of materiel. Byng, vested with an appreciation of logistics in his formative years, was instrumental in strengthening the Q staff and overall logistic dexterity of the Canadian Corps for the offensive of 1918.

Second, the Corps was assisted in overcoming the sustainment complexity of offensive success by virtue of its robust size. Lieutenant-General Currie built most successfully upon the fine formation he inherited from Byng with his preference for redundancy in terms of assets and structure. His decision to resist triangularization in 1918 and then overstock the fighting echelons of the four Canadian divisions in France with the soldiers from the disbanded 5th Canadian Division helped generate CSS flexibility as well as absorb the punishment of fighting three major battles in one hundred days.

¹²⁷ McCulloch, *Study in Operational Command...*, 238.

¹²⁸ Malcolm Brown, *British Logistics...*, 110.

Third, the Canadian Corps had a proactive appreciation of general transport on the battlefield. The requirement for speed, mobility, and survivability of logistic assets was well engrained. Early attempts were made to address the requirement for lift by maintaining additional transport companies at the corps level. These extra assets were also fully mechanized, a qualitative feature rare among British Corps. The amalgamation of the corps ammunition and supply chain in April 1918 was done with the intent of deriving even more transport from finite amounts of corps vehicles. Finally, the debut of a supply tank at Amiens demonstrated an early understanding of commensurate mobility and survivability to support and advance.

Last but not least, the Canadian Corps was an example of superb affiliation. It was like no other BEF corps in terms of its *esprit de corps* and cohesion. Canadian divisions stayed in the Corps and fought within it like a small national army. Other British corps did not enjoy this level of stability and divisions were passed between corps regularly. The result was one of trust and finesse between the supported and the supporting in the punishing campaign that ended the war. In terms of CSS innovation, the Corps was at the cutting edge during the latter stages of World War I.

The remainder of the century stands in stark contrast to Canada's Hundred Days. It was recognized that even during the Hundred Days, the full weight of offensive success could not be fully supported. In the years between the world wars logistics mobility was improved through technology. World War II saw the paradigm shift in organization away from commodity companies into much more flexible composite ones. However, there was precious little change to sustainment doctrine beyond this incremental adjustment. Canadian participation in the Korean War brought new lessons in

interoperability and CSS troop rotations but little in the way of an evolved support ideology. Indeed, no additional doctrinal refinement was required. The divisional train, now a fully mechanized column was resilient and compatible with the battlefield upon which it operated. The motorized column, so clearly envisioned by World War I logisticians, had finally achieved its potential.

The careful development of the brigade group service battalions from 1960 to 1968 was the single greatest doctrinal achievement in Canadian Army logistics since 1918. The Logistic Battalion trials that preceded their introduction were fine examples of observation, thought and experimentation. However, even this versatile support unit practiced the TTPs in vogue at Canal du Nord and Cambrai. Further, sustainment has suffered from a divisive culture in which senior Canadian Forces and army leadership in particular has neglected logistics. Senior army leadership during the Cold War was tribal in nature, more concerned about protecting combat arms units than investing in an administrative tail. The balance between fighting and sustaining became derelict as a result. Similarly, logistics leaders were not overly interested in advancing their doctrine. The logistics community demonstrated a disinclination in using empirical lessons to fashion the new doctrine so desperately needed. The bulk of their time has been spent refining structures and preparing CSS assets for departmental budget cuts.

From *RV 81* to *92*, some twelve years of effort was invested in forging three brigade group service battalions into one mediocre and underpowered DISGP. It had required an entire generation's worth of CSS effort just to approximate what a division had in 1918. At the end of all this effort was the realization that a drastic change was required in the army's sustainment structure. And yet, the required innovation could not

be made. The *RV* Exercises were never truly employed as tools innovation or experimentation where logistics doctrine was concerned. At best, they served as valuable tune-ups for CSS units and the recognized doctrine of the day. The 1996 restructure of CSS assets split the brigade group service battalion into two units with mixed results. Leaving the old doctrine intact, the restructure merely articulated a means by which the divisional support construct of 1918 could be modified to sustain a large brigade group in the creation of close and general support battalions. The experimentation so vital in World War I and in the development of the service battalions over three distinct experiments was discarded.

Despite an acknowledged need, Canadian sustainment doctrine has not evolved. Comprehensive logistics innovation in the Canadian Army has not kept pace with the evolution of the other arms. This is an institutional practice that must dramatically change given the shape of things to come. The future battle space envisioned by both the US JV 2020 as well as the “Future Force” described by DSC both describe a fight that will not be sustained by linear logistics practices. Fighting will occur in a non-contiguous environment where asymmetric threats select complex terrain to engage friendly forces. As such, Canada has a unique opportunity to once again begin leading sustainment change instead of uncritically borrowing bulky volumes of allied doctrine. The Canadian Army has a wealth of experience in supporting its elements in non-contiguous environments. The time is ripe for curtailing the practice of wholesale adoption of CSS doctrine and TTPs. Borrowing has a destructive, stagnating effect—particularly when there is no requirement.

There is every reason to believe that the army is paying attention to the resounding need for intellectual renewal in logistics. The establishment of DAD 9, if properly linked and fully pressed to full potential, could be the most telling advance in Canadian sustainment since the development of the service battalions. The Army Strategy has articulated a purposeful move to a structure with a larger sense and sustainment functionality. In tandem with this, the current Army Commander, Lieutenant-General Rick Hillier, has given sustainment a field commander to oversee its development. A long look back on the history of Canadian CSS development illustrates that the brightest logistics advances of the past 85 years were all command driven. The next changes to logistics in the Canadian Army will be led by the active interest of senior combat arms leader. Finally, with the placement a BTE in the annual training calendar, the field force will have once again venue for experimentation, observation and the trial of new ideas. The amalgam of DAD 9, an annual brigade level training event, a cultural change in how we sustain, and senior combat arms investment in future developments suggests that the Army could be on the brink of a highly dramatic and badly needed paradigm shift in its logistics doctrine.

In a vacuum of innovation, Canadian notions on how logistics will be projected on the modern battlefield remain mired in the best practices of 1918. The negligible advances in Canadian logistics from 1918 to 2003 have been but refinements of possibilities glimpsed but not quite grasped during the Hundred Days. In reality, lessons which demand realization in future sustainment philosophies have been known for a long time. An examination of the Hundred Days illustrates that fashioning our new CSS construct means coming to terms with long neglected, yet deeply understood truths. If

the army were preparing to re-capture Hill 145 on that far-away piece of Canadian soil there would be no need for doctrinal urgency. But the battlefield of our generation looks nothing like the environs of Vimy Ridge. The lessons learned by the Canadian Corps in the war of our grandfathers clearly warn that the need for a logistics renaissance has never been greater.

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