

Artillery and the Enduring Paradigm of the Modern Style of Warfare
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Introduction

Despite the myriad of technological changes that have occurred since the First World War, Jonathan Bailey’s theory of the Modern Style of Warfare (MSW) that emerged with the indirect-fire revolution of 1917-18 remains relevant today. Bailey argued that the MSW materialized from the “advent of *‘three dimensional’* artillery indirect fire as the foundation of planning at the tactical, operational and strategic levels of war.”¹ Additionally, Bailey argued that “the burgeoning development of armour, airpower and the arrival of the Information Age since [1917-1918] amount to no more that complements to it.”² This paper will clarify exactly what Bailey’s paradigm is and the specific circumstances under which it is applicable. Subsequently, this paper will survey the chronological ebbs and flows of western doctrine and demonstrate that the veracity of Bailey’s MSW paradigm remained constant throughout, even if it’s best practices were not always followed. It will do so by illustrating how the framework of the MSW developed during the last two years of the First World War, re-emerged with the synchronization of ground and aircraft fires during the Second World War, and again later with the adoption of *AirLand Battle* doctrine in 1982.

¹ Jonathan Bailey, *The First World War and the Birth of the Modern Style of Warfare*. (Camberley: The Strategic and Combat Studies Institute, 1996), 3.

² *Ibid*, 3.

There is veracity to Bailey's conclusion. Bailey's paradigm of the MSW remains just as relevant to high-intensity conventional warfare today as it did when it emerged, albeit contemporarily unrecognized, in 1917-18. The technological advances represented by increasingly capable aircraft and the emergence of the information age improved the efficiency by which the prosecution of the paradigm could be executed without diminishing the validity of Bailey's theory of the MSW.

The Paradigm

What, exactly, was Bailey arguing? The structure of Bailey's MSW paradigm is as follows: it takes place over an extended area; it is critically affected by time and tempo; targeting is intelligence driven; it consists of both close combat and the engagement of high value targets in depth; it is effects based; and it is best exercised by command and control systems that are able to synchronise these effects in order to break the enemy's will and cohesion.³ Thus, the paradigm goes beyond simply the increased efficacy of artillery fire through emergent technological capabilities. The true meaning of Bailey's paradigm is the comprehensive, synchronised use of fires, be they ground or air delivered, to engage the enemy throughout his depth in order to facilitate manoeuvre.

The paradigm is perhaps best illustrated by its antithesis, the style of warfare that was *de rigueur* prior to the indirect fire revolution. Bailey stated that "warfare in 1914 was linear with prevailing doctrines emphasizing flanks,

³ *Ibid*, 4.

envelopments and annihilations.”⁴ The physical and conceptual lack of depth reflected in this mindset resulted in a very shallow concept of warfare which in turn produced the stagnation of the western front. Artillery is normally blamed for this stagnation, but as historian and retired US Army Major-General David T. Zabecki observed “few really understand, as Bailey argued, that artillery fire was the key to maneuver [sic] rather than the agent of stalemate.”⁵ The indirect fire revolution, comprising targeting by air observers using up to date maps, accurate survey, calculations and allowances for equipment variations such as barrel wear and propellant temperature, permitted the rapid, accurate and concentrated engagement of targets throughout the enemy’s depth.⁶ These emergent technological advances, combined with its inherent range, meant that artillery was the only arm with the ability to reach into the enemy’s depth and shape the battlefield to set the conditions for decisive manoeuvre in close combat. As

Bailey observed in *Field Artillery and Firepower*:

Indirect fire enabled artillery once more to create Napoleonic concentrations of fire, but now through fire mobility rather than the massing of equipment close to the target; and fire could be applied simultaneously in close and deep operations, throughout the whole area of the battlefield, not just along the line of encounter.⁷

Although originally intended to act as a facilitator for the artillery by identifying depth targets, the twilight months of the First World War

⁴ Jonathan Bailey, “Deep Battle 1914-1941: The Birth of the Modern Style of Warfare” in *Field Artillery Journal* (July-August 1998), 22.

⁵ David T. Zabecki, *The German 1918 Offensives: A Case Study in the Operational Level of War*. (New York: Routledge Press, 2006), 4.

⁶ Bailey, *The First World War and the Birth...*, 14.

⁷ Jonathan Bailey, *Field Artillery and Firepower* (Annapolis: Naval Institute Press, 2004), 269.

foreshadowed the importance airpower would play in the deep battle. Bailey observed that “from 1917 onwards, airpower played an increasing role in deep attack and ground-air coordinated operations besides providing reconnaissance and correcting artillery fire.”⁸ As will be demonstrated, airpower was to become the *de facto* provider of fires in the deep battle.

It is essential to understand that the MSW paradigm only applies to a very specific niche on the spectrum of conflict. In particular, the MSW paradigm is applicable only to high-intensity, conventional conflict on land. Detractors would argue that irregular warfare, nuclear war, naval combat and myriad other examples discredit the paradigm. Bailey never intended for his theory to be applied to anything but conventional operations. He clearly articulated that his paradigm only fits “large-scale high-intensity conflict – for while the style is relevant throughout conventional warfare it is *la grande guerre* that reveals its true form most clearly.”⁹ Thus, in order to appreciate how the paradigm has remained conceptually constant since 1918, one must understand that the MSW of which Bailey wrote is a style by which fires are employed throughout the depth of the enemy in order to facilitate manoeuvre, specifically during high-intensity, conventional conflict.

The Second World War

The principles of the MSW paradigm were more often forgotten than remembered during times of peace. The technological advances of the tank and

⁸ Bailey, *The First World War and the Birth...*, 15.

⁹ Bailey, “The First World War and the Birth of Modern Warfare” in *The Dynamics of Military Revolution 1300-2050*, (Cambridge: Cambridge University Press, 2001), 133.

aircraft caused western military leaders to lose sight of the good practices of the MSW. An implacable enemy reminded them, harshly, of the importance of employing an artillery-based doctrine with airpower prosecuting targets in depth. During the Second World War, the framework of the paradigm did not change, even if the means used within it, did.

The inter-war period of 1919-1939 represented a regression from the good practices of the MSW that emerged during the First World War, spurred by technical improvements in aviation and ground mobility which would, it was hoped, solve the problem of stagnation wrongly attributed to artillery fire. Eminent historian and strategist Colin S. Gray observed that “the mechanized warfare and aviation RMAs of the inter-war decades persuaded all major powers, save only for the USSR (and to a lesser degree the United States), to abandon the bloodily learnt lessons of 1914-18 concerning good artillery practices.”¹⁰ The western doctrine that emerged pre-war espoused a blind adherence to breakthrough without fire support.¹¹ Upon the outbreak of the Second World War, this myopia was ubiquitous amongst the Allied nations. Training at the start of the war focussed on large, sweeping manoeuvres of independent formations, rarely waiting for proper artillery support before launching into encounter battles.¹²

Intense combat reminded leaders of the well-worn practices of the MSW. Faced with a motivated, well entrenched enemy, the only solution that worked

¹⁰ Colin S. Gray, *Another Bloody Century: Future Warfare*, (London, Weidenfield & Nicholson, 2005), 115.

¹¹ John Mosier, *The Blitzkrieg Myth*, (New York: Harper Collins, 2003), 10.

¹² Terry Copp, *The Brigade: The Fifth Canadian Infantry Brigade in WWII* (Mechanicsburg: Stackpole Books, 2007), 32.

was the adoption of an artillery-based tactical doctrine.¹³ Whereas doctrine at the outbreak of the war stressed decentralization of fire support, by late 1942 artillery doctrine reverted to a far more centralized and concentrated nature. Indicative of the reversion to the MSW paradigm, in September of 1942 the British Army created the first Army Group Royal Artillery (AGRA) which centralized medium artillery regiments.¹⁴ The AGRAs provided the ability to concentrate heavier fires that was critical to the success of the MSW paradigm.¹⁵ Although the technologically improved tank and aircraft became vital elements of this doctrine, Bailey observed that:

the British reverted to the tactics of the First World War based on static defence and the infantry assault, supported by massive artillery firepower. This combination, not the tank, was responsible for almost every major British success until the end of the war.¹⁶

A key tenet of Bailey's theory is that the technological advances in aircraft performance did not change the paradigm of the MSW but rather, represent an incremental improvement within the paradigm. This was not immediately apparent during the First World War, but became far more prevalent during the Second World War when technological improvements in all domains resulted in a substantially larger battlespace.

The battlespace of the Second World War was far greater in scope than that which was experienced in the First World War. The artillery-based doctrine

¹³ *Ibid*, 32.

¹⁴ *Ibid*, 72.

¹⁵ Colonel G.W.L. Nicholson, *The Gunners of Canada: A History of the Royal Regiment of Canadian Artillery, Volume II 1919-1967* (Toronto: McClelland and Stewart, 1972), 111.

¹⁶ Bailey, *Field Artillery and Firepower...* 297.

that came to dominate the western militaries during the 1939-1945 conflict did not come at the expense of airpower. Quite the contrary, the importance of airpower increased within the MSW paradigm as the role of airpower found a niche in the deep battle. As the battlespace increased in size, the role of artillery became more and more associated with the close fight whilst the increased range and firepower of aircraft meant that to the Allied Air Forces fell the task of deep fires.¹⁷ The incorporation of the air arm into the MSW paradigm occurred, much as the reversion to an artillery-based doctrine, in reaction to initial Allied failures early in the war. The ground force commanders soon realized that given the larger depth of the battlespace, in order to conform to the proven MSW paradigm, they would require dedicated close air support. Shelford Bidwell and Dominick Graham, historians who have written extensively on the history of fire power, observed that:

The events of 1940, and also the brief but effective impact of the Japanese air force on land operation since 1941...brought home to [army commanders] the effectiveness of air-power, rather belatedly, and [the army commanders] demanded (as the Royal Navy had) an air component for the direct support of the army over which they would have effective control.¹⁸

The role of aircraft increased dramatically in importance during the Second World War, not as a detractor to Bailey's paradigm, but a critical component of it. The key challenge was cognitive, not technological. Army commanders who were interested in securing air support were faced with Air

¹⁷ *Ibid*, 357.

¹⁸ Shelford Bidwell and Dominick Graham, *Fire-Power: The British Army Weapons & Theories of War, 1904-1945*, (Barnsly: Pen and Sword Military Books Limited, 1982), 260.

Force commanders who had a myriad of tasks and only limited resources. Unfortunately for the British and Americans, the prevailing doctrine and airframes were designed for strategic bombing and air superiority, while the Soviets and Germans focussed much of their airpower on close air support.¹⁹ Despite substantial internal divisiveness, there were a group of officers who “saw and understood the Army’s needs, but felt...that to be effective air-power must be under centralized control, and that it should be handled by those who were technically competent to do so.”²⁰ Pre-eminent amongst these officers was General E.R. Quesada who commanded the Tactical Air Force of the Ninth United States Army. A key moment in the growing importance of airpower to the MSW paradigm occurred in July 1944 when Quesada diverted over 2000 American bombers from a strategic bombing mission to support a ground operation. Elie Tenenbaum, junior fellow at the Security Studies Centre of the Institute français des relations internationales noted that “for once, the air force was bringing tactical compensation to the artillery, which was lacking range and fire volume.”²¹ Thus, the means of the MSW paradigm changed during the Second World War. Artillery would dominate the close fight while airpower came to dominate the deep fight with fires that facilitated manoeuvre. It is this framework that would continue to perpetuate the MSW paradigm throughout the latter half of the twentieth century.

¹⁹ Elie Tenenbaum, “The Battle over Fire Support. The CAS Challenge and the Future of Artillery”, *Focus Strategique*, no. 35, October, 2012, 12.

²⁰ Bidwell *et al*, *Fire-Power...*, 261.

²¹ Tenebaum, “The Battle over Fire Support...”, 14.

AirLand Battle and Desert Storm

The post-war period saw another digression from the principles of the MSW paradigm. Limited engagements in Korea and Vietnam, executed under the overarching panoply of intercontinental nuclear war, created an atmosphere in which consideration of high intensity conventional operations fell off the radar.²² By the late 1960s, however, the considered viability of the strategy of massive nuclear retaliation started to wane amongst western armies. What followed was a renaissance of conventional doctrine.²³ Starting in the 1970s, the doctrine of *Active Defence*, another in a long line of theoretical digressions from the paradigm of the MSW, would become *de rigeur*. Subsequently, the doctrine of *AirLand Battle* emerged as a cognitive return to the MSW paradigm which would be showcased in Operation Desert Storm in 1991.

Active Defence was the product of General William E. DuPuy who took over command of the US Army Training and Doctrine Command in July of 1973.²⁴ DuPuy hoped to use the lessons learned in the Second World War as the foundation of the *Active Defence* doctrine, seeing the recent experiences in Korea and Vietnam as digressions rather than adherents to that paradigm.²⁵ Although of laudable intent, *Active Defence* fell well short of the MSW paradigm. *Active Defence* was too dependent on fire-power and did not sufficiently stress

²² David M. Glantz "The Intellectual Dimension of Soviet (Russian) Operational Art" in *The Operational Art: Development in the Theory of War* (Westport: Praeger Publisher, 1996), 136.

²³ Bailey, *Field Artillery and Firepower...*, 459.

²⁴ Robert Leonhard, *The Art of Maneuver: Maneuver-Warfare Theory and AirLand Battle*. (Novato: Presidio Press, 1991), 130.

²⁵ *Ibid*, 130.

manoeuvre.²⁶ While on the surface this may seem to adhere to Bailey's theory, it must be remembered that the essence of firepower in the MSW paradigm was to *facilitate* manoeuvre, not to replace it. Most grievously, *Active Defence* seemed to disregard the notion of depth and focus on the close battle only.²⁷ Its weakness in this regard is best observed in comparison to its Soviet counterpart, as described by theorist Robert Leonhard:

Soviet echelonment and their focus on deep operations allowed them to lose the first battle without grave consequence. The first-battle orientation [of *Active Defence*], while perhaps a welcome excuse for ignoring operational art, was... inappropriate.²⁸

Apologists of *Active Defence* claimed that manoeuvre was always a critical element of the doctrine, but in truth, the foundation of the theory of *Active Defence* was, as Leonhard observed, based on the assumption that "maneuver [sic] had lost relevance in relation to firepower."²⁹

Active Defence did not tarry long. By 1977, its replacement, the doctrine of *AirLand Battle*, emerged under General Donn Starry.³⁰ *AirLand Battle* conformed to the MSW paradigm by re-instituting the concept of depth to the doctrine. In a College of Aerospace Doctrine, Research and Education (CADRE) paper written US Air Force Lt. Col R. Kent Laughbaum, the author observed that:

AirLand Battle became the Army's operational war-fighting doctrine in 1982 and remained so through the Persian Gulf War. Its genesis was in the assessment that a European conventional war against the Warsaw Pact could not be won through the close battle alone.

²⁶ *Ibid*, 135.

²⁷ *Ibid*, 133.

²⁸ *Ibid*, 133.

²⁹ *Ibid*, 135.

³⁰ *Ibid*, 135.

Instead, a successful war opposite the Soviets demanded deep-attack operations against second and follow-on armored forces – thus setting the conditions for victory in an offensive-minded close battle.³¹

AirLand Battle represented a return to the tried and true realities of the MSW paradigm. In contrast to the shallow, defensive- and firepower-focused *Active Defence* doctrine, *AirLand Battle* would ensure victory by

attacking the Soviets in depth [in order to] wrest the initiative from the enemy and set the conditions for decisive NATO victory in the close battle... [*AirLand Battle*] relied almost exclusively upon the Air Force to prosecute operations in depth.³²

Moreover, it is important to note that *AirLand Battle* leveraged the very impressive technological advances that occurred in the last decades of the twentieth century. Leonhard observed that “*AirLand Battle* and its progeny... are the first warfighting doctrines in the history of the country to be developed with a great dependence on the computer.”³³ While some are tempted to see the technological advances of the information age as a RMA of its own, in reality it provided the tools to allow the MSW paradigm to function all the more efficiently. This would become readily apparent during the practical application of *AirLand Battle* during Operation Desert Storm.

The overwhelming victory of coalition forces over their Iraqi adversaries in 1991 is an excellent example of the MSW paradigm in action. Bailey observed that “the [first Gulf War] was remarkable for showing the continuities and

³¹ Lt. Col. R. Kent Laughbaum, “Synchronizing Airpower and Firepower in the Deep Battle” (Maxwell AFB: Air University Press, 1999), 11.

³² *Ibid*, 9.

³³ Leonhard, *AirLand Battle...*, 138.

soundness of the principles of joint fire-planning, which were firmly rooted in the early years of indirect fire in 1917-1918.”³⁴ During the conflict, the Joint Forces Air Component Commander, Lt. Gen. Charles A. Horner, had 3,000 allied aircraft available for use.³⁵ The Commander-in-Chief, General H. Norman Schwarzkopf, and his staff divided the operation into four phases: phase one, the strategic air campaign; phase two, the air superiority campaign; phase three, deep operations “*to prepare the battlefield for the future ground offensive*” [emphasis added] and phase four, the ground operation itself.³⁶ During ground operations, “support for offensive maneuver was typically provided by short fire-plans from artillery deploying rapidly off the line of march to support the momentum of the advance.”³⁷ The accuracy and timeliness of engagements was facilitated by the impressive technological advances that had occurred as part of the information age.³⁸ Bailey’s principles of using firepower to engage the enemy throughout his depth in order to facilitate manoeuvre had demonstrated their timelessness.

Conclusion

Since the close of Desert Storm, the world has yet to see another example of the MSW paradigm in action. Some may argue the recent focus on limited war represents the end of the MSW paradigm. It is too early to jump to such a conclusion. Certainly the future conflict environment seems to reflect a world of

³⁴ Bailey, *Field Artillery and Firepower*, 410.

³⁵ Laughbaum, “Synchronizing Airpower and Firepower...”, 26.

³⁶ *Ibid*, 26-27.

³⁷ Bailey, *Field Artillery and Fire Power*, 416.

³⁸ *Ibid*, 410.

limited, intra-state conflicts in which the principles of the MSW do not apply. That notwithstanding, the principles are sound, and are worthy of retention.

Bailey's theorem has stood the test of time. The MSW paradigm of using overwhelming firepower to engage the enemy throughout his depth in order to facilitate decisive manoeuvre remains the best practice for high intensity combat. This paper has demonstrated that the introduction of the tank, the improvement of aircraft and the advent of the information age has only served to shape the means and efficiency, not the framework, of the paradigm. Armoured vehicles and tanks have made it easier for the manoeuvre element to exploit the effects of firepower, while close support aircraft have provided greater range and lethality to engage even more fully throughout the breadth and depth of the enemy. The technological advances of the information age have provided computers to assist in the analysis of targets and the coordination of their engagement so as to improve the efficiency of the MSW paradigm. While a great deal has changed since 1918, Bailey's paradigm has remained constant.

BIBLIOGRAPHY

- Bailey, Jonathan. "Deep Battle 1914-1941: The Birth of the Modern Style of Warfare" in *The Field Artillery Journal* (July-August 1998), 21-27.
- . *Field Artillery and Firepower*. (Annapolis: Naval Institute Press, 2004).
- . *The First World War and the Birth of the Modern Style of Warfare*. (Camberley: The Strategic and Combat Studies Institute, 1996).
- . "The First World War and the Birth of Modern Warfare." In *The Dynamics of Military Revolution 1300-2050*, (Cambridge: Cambridge University Press, 2001), 132-153.
- Bidwell, Shelford and Graham, Dominick. *Fire-Power: The British Army Weapons and Theories of War 1904-1945*. (Barnsly: Pen and Sword Military Books Limited, 1982).
- Copp, Terry. *The Brigade: The Fifth Canadian Infantry Brigade in WWII* (Mechanicsburg: Stackpole Books, 2007).
- Glantz, David M., "The Intellectual Dimension of Soviet (Russian) Operational Art" in *The Operational Art: Development in the Theory of War* (Westport: Praeger Publisher, 1996), 125-146.
- Gray, Colin S. *Another Bloody Century* (London: Weidenfeld & Nicolson, 2005).
- Laughbaum, R. Kent "Synchronizing Airpower and Firepower in the Deep Battle" (Maxwell AFB: Air University Press, 1999).
- Leonhard, Robert. *The Art of Maneuver. Maneuver-Warfare Theory and AirLand Battle*. (Novato: Presidio Press, 1991).
- Mosier, John. *The Blitzkrieg Myth*, (New York: Harper Collins, 2003).

Nicholson, G.W.L. *The Gunners of Canada: A History of the Royal Regiment of Canadian Artillery, Volume II 1919-1967* (Toronto: McClelland and Stewart, 1972).

Tenenbaum, Elie. "The Battle over Fire Support. The CAS Challenge and the Future of Artillery", *Focus Strategique*, no. 35, October, 2012.

Zabecki, David T. *The German 1918 Offensives: A Case Study in the Operational Level of War*. (New York: Routledge Press, 2006).