

CANADIANS AGAINST FIRE

Canada's Soldiers

and

Marshall's "Ratio of Fire"

1944-1945

by

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ABSTRACT. This thesis investigates one of the staples of academic literature on combat motivation, S.L.A. Marshall's "ratio of fire," through the examination of previously untouched primary-source documentation from the Second World War. This evidence, a series of Battle Experience Questionnaires filled out by combat infantry officers of the Canadian Army in 1944 and 1945, details a wide range of tactical issues experienced by soldiers in battle. The interpretation and implications of this data for the "ratio of fire" theory is discussed, as the questionnaires make detailed inquiry into weapon use, infantry co-operation with other arms, and general combat effectiveness. The thesis concludes that this documentary evidence strongly supports the idea that, at the least, Marshall's "ratio of fire" statements are inapplicable to the Canadian experience of the Second World War, and that the body of literature based upon Marshall's conclusions deserves a critical re-examination.

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Chapter One – Introduction

We too often ascribe to successful men a godlike infallibility, instead of weighing all things in the light of reason. What the Great Captains thought, succeeding generations find it difficult to forget and challenge reluctantly despite an ever-broadening human experience.

– S.L.A. Marshall, 1950¹

Samuel Lyman Atwood (S.L.A.) Marshall was not a man who adhered to established patterns of military thinking. An American journalist, battlefield observer, and military writer from the First World War to Vietnam, Marshall and his voluminous writings on war helped to define the study of human behaviour in combat during the second half of the twentieth century. Never shy to overturn an established idea if he believed it to be faulty, Marshall made a successful career and name for himself through examining, critiquing, and attempting to reform aspects of American military policy. Many of the recommendations he made over the course of decades of analysis were reportedly adopted by the U.S. Army, particularly in the training of infantry in modern warfare.² His influence has also been mirrored in the academic community, where S.L.A. Marshall's work is frequently cited even fifty years after its initial publication, and where he is honoured as one of the great military historians of the twentieth century.

S.L.A. Marshall, however, was a journalist. Although he worked as a member of the U.S. Army's Historical Branch in the Second World War, and indeed was profoundly influential there, his methodology remained that of a journalist. As historian John Keegan once commented, Marshall wrote not as an analytical historian, engaging with

1 S.L.A. Marshall, *The Soldier's Load and the Mobility of a Nation*, (Washington D.C.: The Combat Forces Press, 1950), 9.

2 F.D.G. Williams, *SLAM: The Influence of S.L.A. Marshall on the United States Army*, (Fort Monroe, VA: United States Training and Doctrine Command, 1994), 77-87.

the complexities of human experience, but as a proponent of change attempting to persuade the U.S. Army that it was fighting the wrong way.³ A lifelong devotee of the American military and its interests, Marshall's objectives ultimately involved getting his point across to the people he felt needed to hear it, in as forceful and persuasive a fashion as possible. While Marshall wrote many fine descriptive histories, some of which represent the most accurate battlefield reconstructions of the Second World War that we may ever have, his underlying goal of seeing his ideas actuated on a practical level has resulted in his work being the subject of controversy.

It is with some irony that Marshall's work and reputation have established him among the ranks of the "Great Captains" of American military thought in the twentieth century, given his own earlier warnings on the uncritical acceptance of the "Great Captains'" work. His own thoughts on the matter are clear: to Marshall, there seemed to exist no established idea that was immune to scrutiny, no assumption that should not be examined and, if found wanting, overturned. No individual's work, he believed, should be considered above critical analysis, and in theory this should include Marshall's own writings. His work, and particularly his 1947 book *Men Against Fire*, which is still considered a definitive monograph on infantry combat, have since been incorporated into practical military policy and have inspired similar studies and books both popular and academic. Many of these works accept Marshall's findings from the Second World War uncritically and defend them passionately against outside criticism, having elevated Marshall's work to the status of a universal truth about combat. Now, several decades

³ John Keegan, *The Face of Battle: A Study of Agincourt, Waterloo, and the Somme*, (London: Pimlico, 2004), 74.

after his death, it is impossible to know what his personal thoughts would have been regarding this body of literature. But if one could hazard an educated guess, his view of it would be rather dim.

S.L.A. Marshall, regardless of what his position as a “Great Captain” of military history may have been, was not always right in his observations or in his conclusions. In particular, his work on human behaviour in war and his ideas concerning the “ratio of fire,” detailed in *Men Against Fire*, has proven controversial. The “ratio of fire” debate, in brief, concerns Marshall's conclusions that, during the Second World War, only 15 to 20 percent of American infantrymen ever fired their weapons in combat, even veteran soldiers, even when in life-threatening situations. This was based upon Marshall's interviews with groups of soldiers during the war. The ramifications, that over 80 percent of trained soldiers would not fight, kill, or act aggressively in battle, were tremendous to military history, offering an entirely new, radical interpretation of human behaviour in battle. S.L.A. Marshall's “ratio of fire” represents a radical re-interpretation of human behaviour in warfare, stipulating that not just in the Second World War, but in *all* wars, most men will not fight and will not kill. The implication is that everything we know about the behaviour of soldiers in history is incorrect. Although his “hard data” on fire ratios has since been criticized by some historians as, at minimum, a gross over-generalization, this data remains the most prominent part of Marshall's legacy to this day. It is still widely and uncritically cited as authoritative by historians and military experts alike, and what criticism there has been of it has largely been downplayed because, ironically, of Marshall's status as a “Great Captain” of military history. The controversial

“ratio of fire” data, despite being so prominent, have never been seriously examined through rigorous historical inquiry and evidence.

This present study seeks to undertake such an inquiry. To the best available knowledge, no research has ever been done to independently engage with Marshall's claims on the basis of what the actual documentary evidence demonstrates on the matter. This reluctance has no doubt developed in part because the records have been largely silent on the issue; very few pieces of documentary evidence, apart from Marshall's, have been found that have indicated whether or not soldiers were firing their weapons in battle. In the absence of not only contradictory evidence, but of any evidence at all to support or refute the claims, Marshall's “ratio of fire” data has inhabited an uncomfortable academic limbo where scholars have simply assumed it to be correct. As one can imagine, this is a potentially dangerous assumption for the study of human behaviour in battle. Marshall was a first-class thinker and a dedicated firebrand for what he thought was right; however, in the spirit of his own pursuit of the truth and overturning of assumptions, his own work must be engaged with a critical eye, to discover whether his claims have independent merit.

This present work examines the veracity and universal applicability of claims made by Marshall in *Men Against Fire* in the light of documentary historical evidence. In this instance the evidence takes the form of a series of tactical combat surveys from the Second World War, contemporary to Marshall's own war interviews, filled out by Canadian combat infantry officers in 1944 and 1945. The surveys detail and explore many aspects of infantry combat, and have never been rigorously examined as historical

documents. They are not combat reports and do not tell many stories; instead, they provide answers to specific questions relating to the combat experience that those administering the surveys – who were attached to the First Canadian Army Headquarters – believed would be valuable in improving infantry training. Among the data and commentary provided by these few hundred officer surveys, answers to some of the outstanding questions regarding the veracity of S.L.A. Marshall's “ratio of fire” work can be found.

This study is not, however, intended to directly refute or support Marshall's claims. It deals entirely with Canadian soldiers, who were never studied by Marshall and were outside the bounds of his American-exclusive research during the Second World War. At the same time, however, Canadian and American troops had more in common during that war – everything from training to equipment to geographic proximity – than they did differences. While this study cannot speak directly to Marshall's data, it uses the Canadian Army in the Second World War, insofar as its members are represented in the surveys, as a test case for the “ratio of fire.” Given that S.L.A. Marshall claimed a degree of universality in his findings on this subject, this is not an unreasonable approach to take. If evidence exists of such an unfavourable number of Canadian soldiers not firing their weapons, as Marshall claimed to have found it among American troops, then his claims are supported by historical evidence. If his research cannot be substantiated, however, then Marshall's claims of universality of this “ratio of fire” are discredited, and some difficult questions must be directed at his claims made specifically for American troops.

This study concludes, on the basis of the survey data, that it is impossible to validate S.L.A. Marshall's claims about the "ratio of fire" in the Canadian experience, and that, indeed, the evidence provided by the surveys overwhelmingly indicates that no such difficulty existed at all.

Chapter One of this work is historiographical in nature, and is dedicated to a detailed examination of the work of S.L.A. Marshall, some of his supporters, and the work of those scholars who have, to this point, been his main critics. Many of these past criticisms of Marshall have consisted of personal attacks and attempts at discrediting the man rather than engaging with his work, which has proven to be both problematic and ineffective in terms of calling Marshall's influence into question in the public eye.

Chapter Two concerns the methodology and primary evidence employed by this present study. It discusses research techniques, the battle experience surveys as historical artifacts, and engages with potential criticisms that could be raised regarding their application in examining the veracity of Marshall's work.

Chapter Three contains an examination, based in part upon new data and information from the surveys, of the tactical realities of combat in the Second World War, and particularly of the centrality of infantry combat to ground warfare during those years. While the war may be remembered as a mechanized affair, there were practical limitations on the power of both artillery and armoured vehicles, which ensured that infantry remained the arm of decision in ground combat. This is necessary to understand in order to appreciate the importance of riflemen and small arms fire, which Marshall claims was completely inadequate.

Chapter Four contains the greater part of the evidence drawn from the surveys, engaging with the questionnaire data in as comprehensive a manner as possible to determine what was being said by Canadian combat officers on the amount of firepower being generated and the ratio of soldiers firing their weapons. Related analysis is also provided on the role of the replacement soldier in combat, and the effectiveness of small arms' weapon fire. The conclusions based upon the evidence are that a lack of infantry fire was never a problem like Marshall claimed; officers were far more concerned about too much firing on the part of their troops.

The ultimate ramifications of this study's conclusion – that the evidence does not support S.L.A. Marshall's famous claims – are best discussed in other forums. They might, however, require that the body of historical literature surrounding Marshall be revisited to at least some degree. For while Marshall's observations have formed an element of the consensus view of human behaviour in combat for the past sixty years, they can no longer be said to be fully in line with what the historical evidence has demonstrated for us. While all due respect is reserved for S.L.A. Marshall and his work, it may be time to start questioning and challenging some of the long-held ideas on combat behaviour that his writings have been partially responsible for shaping.

Chapter Two – Historiography

If there is any truism in the discipline of history, it is that character assassination does not make for convincing historiography.

Proof positive is the case of S.L.A. “Slam” Marshall, a career journalist-soldier and writer, whose work has become the nexus of some of the bitterest historiographical quarreling seen in the past two decades of North American military history. Marshall's case is instructive in that it is a reminder that academia is not a courtroom trial, and no amount of character defamation will discredit an individual's evidence by itself. It demonstrates that calling its creator a liar will not make an idea itself go away.

Samuel Lyman Atwood Marshall was, two decades ago, one of the most respected American military writers of the twentieth century. He claimed to have “seen” combat in every war that the United States had been engaged in between 1917 and 1975, although he had only served as a soldier in the First World War. His reputation as a combat observer was established with his work for the U.S. Army's Historical Branch during the Second World War, an organization that he spearheaded, despite having no formal training in the discipline of history. In his memoirs Marshall described his wartime assignment as, “to search for some new system of battle reporting that would clear away all of the confusions of the fire fight.”¹ This he found in his famous “mass interview” oral history techniques, which involved interviewing *en masse* large groups of non-commissioned soldiers who were fresh from the battlefield, in the hopes of piecing together the details of the action they had participated in for the sake of Historical Section analysis and posterity. Marshall at one time claimed to have performed over 500

1 S.L.A. Marshall, *Bringing Up the Rear: A Memoir*, Ed. Cate Marshall, (San Rafael, CA: Presidio Press, 1979), 67.

interviews in the Pacific and northwest Europe during the war,² and in the process learned more about the tactical experience of the American G.I. than anyone had done previously.

Having personally taken down the group accounts of thousands of soldiers, S.L.A. Marshall had the sympathetic ear of the military establishment for the rest of his life, and in subsequent years applied his same oral history techniques in Korea, Vietnam, and Israel's Six-Day War. Marshall wrote 30 books before his death in 1977, almost all of which dealt with aspects of the U.S. Army through four decades of conflict, typically revolving around observations on the plight of the infantryman, or combat narratives to the same effect. One of his books, *Pork Chop Hill: The American Fighting Man in Action*, was subsequently made into a popular war movie, and, as Marshall told it, the official historical records of the U.S. Airborne divisions in Normandy were copied from his own field notes that eventually became a book entitled *Night Drop*.³ However, the book which S.L.A. Marshall remains best-known for among historians is a slim volume printed in 1947, his first book after the Second World War, *Men Against Fire: The Problem of Battle Command in Future War*.

It is no small irony that a journalist so prolific in his writing and with so much to say has become best-known for what amounts to about one chapter in a short work. But at the same time Marshall stalwartly maintained the fundamental truth of his findings in *Men Against Fire* for the rest of his life, as well as their further development in later works, so perhaps he would have no one to blame for the attention but himself. The crux of the *Men Against Fire* controversy is an oft-quoted and oft-misquoted observation of Marshall's, supposedly derived from the "hard data" of hundreds of mass interviews with

2 Williams, *SLAM*, 26. The number of interviews he conducted is a matter of some controversy.

3 S.L.A. Marshall, *Night Drop: The American Airborne Invasion of Normandy*, (Boston: Little, Brown & Company, 1962), xi.

American infantrymen during the war:

Later when the companies were interviewed at a full assembly and the men spoke as witnesses in the presence of the commander and their junior leaders, we found that on an average not more than 15 per cent of the men had actually fired at the enemy positions or personnel with rifles, carbines, grenades, bazookas, BARs, or machine guns during the course of an entire engagement. Even allowing for the dead and wounded, and assuming that in their numbers there would be the same proportion of active firers as among the living, the figure did not rise above 20 to 25 per cent of the total for any action. The best showing that could be made by the most spirited and aggressive companies was that one man in four had made at least some use of his fire power.⁴

Marshall was not claiming that only a quarter of U.S. infantrymen were using their weapons *effectively*, he was claiming that less than a quarter used them *at all*. “I do not mean to say,” Marshall continues in *Men Against Fire*, “that throughout an engagement, the average company maintained fire with an average of 15 per cent of its weapons...if [the soldier] had so much as fired a rifle once or twice, though not aiming it at anything in particular, or lobbed a grenade roughly in the direction of the enemy, he was scored on the positive side.”⁵ Marshall claimed that during the Second World War only a few combat soldiers would ever shoot at one another, given any opportunity or provocation, even in the face of death. And this was not including support personnel – a key distinction, since only a tiny fraction of U.S. Army personnel participated in battle – but was true of front-line infantry riflemen.⁶ Whatever killing was being done on the battlefield, according to Marshall, was being done either by a tiny minority of the men or else by heavy weapons such as artillery and bombers. Non-firing soldiers were not

4 S.L.A. Marshall, *Men Against Fire: The Problem of Battle Command in Future War*, (New York: William Morrow & Company, 1968), 54.

5 Ibid., 56-57.

6 Ibid., 58.

necessarily cowards, nor would they break and run when confronted with a firefight; as *Men Against Fire* makes explicit, “they did not shirk the final risk of battle...they were there to be killed if the enemy fire searched and found them.”⁷ But, in the end, they would still not fire.

Marshall maintained that this lack of fire had little or nothing to do with the training or discipline imbued in troops. Indeed, he implied quite the opposite: “Company by company we found in our work that there were men who had been consistently bad actors in the training period, marked by the faults of laziness, unruliness, and disorderliness, who just as consistently became lions on the battlefield...they could fight like hell but they couldn't soldier.”⁸ Instead, Marshall theorized that the cause was more fundamental to the human – and particularly the American – condition, wherein civilization had cultivated in most people a “fear of aggression” so strongly absorbed that it became “part of the normal man's emotional make-up.”⁹ *Men Against Fire* goes on to postulate that:

It is therefore reasonable to believe that the average and normally healthy individual – the man who can endure the mental and physical stresses of combat – still has such an inner and usually unrealized resistance toward killing a fellow man that he will not of his own volition take life if it is possible to turn away from that responsibility. Though it is improbable that he may ever analyze his own feelings so searchingly as to know what is stopping his own hand, his hand is nonetheless stopped. At the vital point, he becomes a conscientious objector, unknowing.¹⁰

Such theorizing on a previously undocumented aspect of human nature signaled that Marshall was not interested in simply making observations about the Second World War,

7 Ibid., 59.

8 Ibid., 60-61.

9 Ibid., 78.

10 Ibid., 79.

but was postulating a revolutionary idea that he saw as applicable to all human conflict. Soldiers were not firing their weapons because human beings possess an inner resistance to killing one another. Despite what some of his supporters would later claim,¹¹ Marshall was not merely providing a “snapshot” of just the American G.I. from 1943 to 1945, but was making the case that this resistance to killing was a normal, if undocumented, aspect of human warfare. The “proof” was Marshall's hard data from the mass interviews.

Men Against Fire contains many other observations on combat, even if what Marshall dubbed the “ratio of fire” stole the spotlight, so he perceived it at the time as only one assertion among many. The same book contains some of the key discussions on small group cohesion that British historian Hew Strachan would, much later, claim had made Marshall the “high priest of the small group” in military history circles.¹² Marshall likely never intended for the “ratio of fire” to become the academic elephant in the room that it did, nor for it to overshadow other aspects of his work and legacy. Unfortunately, his intentions in writing it can only be speculated upon, and for at least the past twenty years the name of S.L.A. Marshall has been inextricably anchored to the idea that most soldiers during the Second World War would not shoot to kill, or even shoot at all.

Marshall claimed to have first noticed this unfavourable “ratio of fire” in the Pacific War, but later found that the same observations applied to the land war in northwest Europe during 1944 and 1945. As Marshall's story is told, he broke new ground as the first person to observe and empirically document this phenomenon, though he made apparent his belief that his findings could be applied with equal validity in

11 For example, in F.D.G. Williams' official U.S. Army publication defending S.L.A. Marshall. See: Williams, *SLAM*, 84-85.

12 Hew Strachan, “Training, Morale and Modern War,” *Journal of Contemporary History*, Vol. 41, No. 2 (April 2006), 213.

retrospect to previous conflicts, and that the “ratio of fire” had simply gone undocumented before he came along.¹³ This was a claim he never backed down from; Marshall was nothing if not self-assured, and even one of his oldest friends and colleagues, John Westover, described him as, “a cocky bastard; he never expressed any self-doubts.”¹⁴ The U.S. Army certainly never gave him any reason to doubt himself, as they gave tremendous gravity to his work, particularly after *Men Against Fire* saw print. Marshall was subsequently promoted to the rank of general by the Army, which supposedly made changes to its training and doctrine. By the time American soldiers saw combat again, this time in Korea, Marshall could proudly say that the ratio of American fire was much higher. He carried out more “mass interviews” during the Korean War under the auspices of the U.S. Army's Operations Research Office, and claimed that, thanks in large part to his own previous discoveries, the “ratio of fire” had risen to over 50 percent among combat infantry.¹⁵ Further improvements in training were suggested by Marshall and implemented, so that when the U.S. Army commissioned “Slam” to carry out similar studies in Vietnam, he claimed that the ratio had risen again to the point where practically every American soldier was making at least some use of his weapon in combat.¹⁶ As John Keegan has pointed out, Marshall had the unusual experience, for a historian, of seeing his message not merely accepted in his lifetime but translated into practice.¹⁷ Such an increase in the ratio of firepower being delivered amounted to a

13 Marshall, *Men Against Fire*, 53. Quoth Marshall: “Why the subject of fire ratios under combat conditions has not been long and searchingly explored, I don't know, but I doubt that it is because of any professional taboo, and I suspect that it is because in earlier wars there had never existed the opportunity for systematic collection of data.”

14 John Douglas Marshall, *Reconciliation Road: A Family Odyssey of War and Honor*, (Syracuse University Press, 1993), 23.

15 S.L.A. Marshall, *Infantry Operations & Weapons Usage in Korea*, (London: Greenhill Books, 1988), 4-8.

16 Williams, *SLAM*, 84.

17 Keegan, *The Face of Battle*, 74.

potential breakthrough in warfighting, observed and empirically documented exclusively by S.L.A. Marshall, and certainly credited to him by both himself and his supporters.

This achievement, combined with his first-hand knowledge, his other voluminous works of history, and a genuine flair for the written word helped to canonize Marshall as one of the patron saints of military history for the mid-twentieth century. Keegan famously acknowledged him as such in the first chapter of *The Face of Battle*, saying of Marshall's writing that, "it is a flavour we can begin to call distinctively American, for his influence on military historians in his own country...is becoming marked." Keegan referred to him as a "genius," and to *Men Against Fire* as a "masterpiece."¹⁸ Several major works prior to the late 1980s were based heavily upon Marshall's data, perhaps most famously Russell Weigley's *Eisenhower's Lieutenants*, one of the first serious studies of the 1944 battles in Normandy following D-Day. Weigley employed Marshall's ratio of fire extensively to highlight the supposed shortcomings of American infantry during that battle, but with the variation that it was the absence of NCOs watching soldiers as closely in the Second World War as they had in previous conflicts that led to the drop in fire.¹⁹ Marshall remained a potent name within the American military establishment for decades, a legacy of his relentless work and research for the Army even after his formal retirement in 1960. In later years Marshall's old colleagues could find themselves possessing some degree of celebrity in certain circles by virtue of having once worked with him.²⁰

While Marshall confronted criticism in his day in a belligerent manner, there was

¹⁸ Ibid., 74.

¹⁹ Russel Weigley, *Eisenhower's Lieutenants*, (Bloomington: Indiana University Press, 1981), 26. For a good critique and partial rebuttal from a Canadian perspective, see: Terry Copp, *Fields of Fire: The Canadians in Normandy*, (Toronto: University of Toronto Press, 2003), 10-11.

²⁰ John Marshall, *Reconciliation Road*, 24-25.

never a serious critical discussion of his techniques or the potentially controversial “ratio of fire” findings during his lifetime. Such discussion waited for over a decade following his death, when a series of scholarly articles published in the late 1980s dragged the question of “Slam's” trustworthiness and the veracity of his research findings into the academic spotlight. First among these were separate articles by historians Roger Spiller and Fredric Smoler, in the *RUSI Journal* and *American Heritage* magazine respectively, both of which critically examined Marshall's findings and the man himself.

This is a point worth briefly examining, since critiques of S.L.A. Marshall have encountered the difficulty of attempting to disprove an assertion without having any real means to do so. Marshall's comments on the “ratio of fire” and men not firing their weapons holds a unique ground, as there has previously been very little evidence for or against them, beyond Marshall's original assertions. There is little corroborating evidence that has emerged up to this point that supports Marshall's claims in any substantive way. But at the same time the question of men firing their weapons was not one that participants in the Second World War were regularly polled on, so there has been very little to disprove Marshall's “ratio of fire” either. It was likely taken for granted by most military men that trained soldiers would be able and willing to pull the trigger, as it was not a question that, apart from Marshall, was really discussed at the time. The question of “did soldiers fire their weapons?” or any variation thereof does not appear, for example, in the excellent multi-volume social statistical surveys of American soldiers carried out by Samuel Stouffer and his team of psychologists during the Second World War, one of the very few questions that they did not think to ask.²¹ The major difficulty in critiquing Marshall, then, is that since he was the only one talking about this “ratio of

21 Stouffer, et al., *The American Soldier*

fire” phenomenon, it is difficult to either confirm or disprove it through other sources or evidence. And while Marshall's supporters have been all too willing to take the man at his word, his critics have adopted other approaches due to a lack of contradicting evidence.

Rather than looking for historical evidence, Marshall's foremost critics undertook an investigation of the man himself that can charitably be called harsh and at its worst could easily be what Marshall's grandson named it: character assassination.²² Smoler's 1989 article, “The Secret of the Soldiers Who Didn't Shoot,” levels accusations that “it may just be that Samuel Lyman Marshall made the whole thing up.” Smoler claims that Marshall lied about his personal military service in the First World War, the number of mass interviews he conducted in the Second World War, and that during those interviews he had not in fact queried soldiers regarding their weapons' use.²³ Roger Spiller and John Whiteclay Chambers II carried out interviews of their own with some of Marshall's aides and companions from northwest Europe and Korea who “could not recall Marshall *ever* asking this question [of who fired their weapons]” during the group interviews.²⁴ While some of Marshall's field notebooks are held at the U.S. Army War College in Pennsylvania and at the University of Texas at El Paso, historians have gone through them and have found nothing to indicate that Marshall ever undertook detailed statistical analyses or collected anything more than broad impressions to arrive at his “ratio of fire” conclusions in *Men Against Fire*.

Some of these accusations were subsequently addressed by Marshall's supporters,

22 See: John Marshall, *Reconciliation Road*, 102.

23 Frederic Smoler, “The Secret of the Soldiers Who Didn't Shoot,” *American Heritage*, Vol. 40, No. 2 (March 1989). Online copy.

24 Roger J. Spiller, “S.L.A. Marshall and the Ratio of Fire,” *The RUSI Journal*, (Winter 1988); John Whiteclay Chambers II, “S.L.A. Marshall's *Men Against Fire*: New Evidence on Fire Ratios,” *Parameters*, (Autumn 2003), 118-120.

though most remain unanswered and outstanding. That “Slam” exaggerated and at least partially fabricated his much-vaunted combat record in the First World War is now a matter of record. Research done by his own grandson, John Marshall, revealed that Marshall never held the battlefield commission that he was so proud of (he had claimed to have been the youngest commissioned officer in the American Expeditionary Force during the fighting)²⁵ and that at least some of the events he spoke of could not have happened.²⁶ The end result was to colour S.L.A. Marshall as a man prone to exaggeration and fabrication, undermining the veracity of his research. The logic underlying this approach seems to be that if the evidence itself cannot be successfully discredited, then discrediting the work's author represents another way to attack the argument. While this approach can at times trespass over into being mean-spirited – particularly Smoler's *American Heritage* article, which was inflammatory and enraged Marshall's family – Marshall's critics all make extremely valid points. For all their uncharitable approaches to the argument, they are not wrong in criticizing “Slam's” ratio of fire as highly suspect. While Marshall did carry out after-action group interviews, he could not possibly have carried out as many as he often claimed, and there is a glaring lack of evidence that Marshall acquired empirical data or went through the statistical legwork he would have needed to in order to arrive at his extremely precise calculations of the “ratio of fire.” Marshall's grandson John Marshall, who undertook an extensive research trip to discover the truth about his grandfather and clear the accusations against him, was forced by his findings to conclude that no hard evidence backing up the “ratio of fire” exists.²⁷ David

25 Marshall, *Bringing Up the Rear*, 15.

26 John Marshall, *Reconciliation Road*, 53 and 69. In some personal documents SLAM indicated that he had been standing five yards away from his best friend in the AEF, Charly Jones, when Charly took three machine-gun bullets in the face. John Marshall later discovered that SLAM had in fact been away from his unit in training for a commission for weeks before and after his friend had been killed.

27 See: John Marshall, *Reconciliation Road*.

Bain from *The New York Times* commented in his review of John Marshall's book, *Reconciliation Road*, that, "The most the author could show was that his grandfather had tried to quantify what should have remained conjecture," by attaching the "ratio of fire" numbers to his battlefield observations without systematic data collection.²⁸

Marshall's critics have been harsh, attacking on a personal level usually outside the bounds of academic discourse, but they are not necessarily wrong in their assertions. S.L.A. Marshall was known to exaggerate and perhaps even fabricate the truth about a range of topics, from his First World War service record to the number and scope of interviews carried out to the fact that his "ratio of fire" numbers were supported by hard data. Even Marshall's "definitive" defence, F.D.G. Williams' biography for the U.S. Army Training and Doctrine Command, admits that, "Most people who knew or worked with Marshall admit that he was not a stranger to oversimplification, exaggeration, or manipulation."²⁹ At least one of his fellow analysts at the Operations Research Office in Korea, Colonel E.M. Parker, wrote that he believed Marshall conducted interviews to support his preconceived ideas.³⁰ And Marshall's old friend and comrade John Westover admitted before the controversy was ignited by Spiller and Smoler that:

Keep in mind, Marshall was an intuitive thinker. He did not gather evidence, weigh it ponderously, draw tentative hypotheses, then test them. If he did, it was not in an organized manner. Usually, from "out of the blue" he stated a principle. Then he marshaled his evidence and statistics to back his concepts. Some of his statistics are subject to grave question as to source.³¹

28 David Howard Bain, "In Defense of an Old Warrior," *The New York Times*, (2 January 1994). Bain points out that despite John Marshall's attempts at journalistic impartiality during the endeavour, he quickly emerges as his grandfather's vociferous advocate.

29 Williams, *SLAM*, 3.

30 Ibid., 28.

31 Letter to F.D.G. Williams, quoted in: *ibid.*, 30. John Westover, while apparently willing to entertain some criticisms of his old boss before the worst of the Marshall controversy unfolded, later retreated on many of his prior comments and claimed not to remember any specifics, as John Marshall found to his

Marshall did little to aid his own case. In his memoirs he freely admits that in his first historical assignment during the Second World War, the 1943 invasion of Makin Island in the Pacific, he saw clear and ample evidence of nervous, trigger-happy firing patterns among the American troops who landed there, firing their weapons *too much* – a far more typical response, as shall be discussed in depth later. However, Marshall chose not to focus on this phenomenon and to largely ignore that particular evidence because, as he himself claims, it did not coincide with his conception of the “most serious problem,” that of soldiers not firing their weapons at all.³² So it would seem that there is substance to Parker and Westover's observations on S.L.A. Marshall. On his very first deployment as a combat observer, Marshall's preconceived ideas about the nature of battle were already sufficiently strong that he felt completely comfortable marginalizing important data in favour of his own conclusions.

It is difficult to prove a negative, so one cannot say with absolute certainty that Marshall did not base his findings upon real, observable phenomena at the time of his interviews. But in the absence of hard evidence that he actually carried out the rigorous data-collection that he explicitly stated he had, and furthermore in the absence of any corroborating evidence from other sources, the historian is left in the awkward position of having to accept Marshall's word alone. Normally this would not be a pressing issue: the study of history, with its focus on documentary and oral evidence, would be untenable if it took as its basis the supposition that everybody lies. However, in the case of Marshall the various attacks on his character and methodology have demonstrated that his word was not always good, his accounts were sometimes flawed, and that the possibility exists

frustration. See: John Marshall, *Reconciliation Road*, 22-40.

³² Marshall, *Bringing up the Rear*, 70.

that his devotion to preconceived ideas outweighed his integrity in reporting the facts. This makes the position of the historian distinctly uncomfortable in this situation. These criticisms show that, at minimum, Marshall may not be fully trustworthy as a source. Given the evidence, it is neither unreasonable nor unsupportable when historians such as Terry Copp dismiss Marshall's "ratio of fire" on the grounds that he "had made it all up!"³³

It is interesting to note then, that this approach, the assault upon character and credibility, evidently does not work in the academic arena. While Marshall's scholarly work has been treated with a somewhat greater caution since his critics began to speak up, his "ratio of fire" evidence is still widely cited as authoritative by historians and military analysts. Most often these citations come across as casual references in the text, such as in historian Niall Ferguson's *War of the World*, where Marshall's ratio of fire is cited as supporting evidence for an argument about the combat performance of American troops in the Second World War.³⁴ Gender historian Joanna Bourke's *An Intimate History of Killing* uses Marshall's ratio of fire in a similar way, as it receives several pages of treatment in a chapter on training men to kill and allows only the barest mention that the numbers may not be fully reliable.³⁵ The new edition of journalist-historian Gwynne Dyer's *War* likewise employs S.L.A. Marshall's ratio of fire numbers and analysis to add credibility to arguments about how men are not natural killers, but without any discussion at all of Marshall's reliability.³⁶ The ratio of fire numbers continue to find their way into official military publications as well, even in Canada: in a

33 Copp, *Fields of Fire*, 12.

34 Niall Ferguson, *The War of the World: Twentieth Century Conflict and the Descent of the West*, (New York: The Penguin Press, 2006), 521.

35 Joanna Bourke, *An Intimate History of Killing: Face to Face Killing in 20th Century Warfare*, (London: Basic Books, 1999), 63-64, 73-75.

36 Gwynne Dyer, *War: The New Edition*, (Random House Canada, 2004), 53-57.

2006 collection on military disobedience Colonel Bernd Horn employs them in passing to support a discussion on fear in combat, again with no mention of their credibility.³⁷

Despite the outstanding and largely unanswered allegations ranging from inaccuracy to outright fraud, S.L.A. Marshall's "ratio of fire" has evidently come back into academic vogue. A recent symposium on combat soldiers in the *Journal of Contemporary History* highlighted Marshall's "ratio of fire" and invoked it as evidence in almost every article. Simon Wessely, one of the contributors, demonstrates the general lack of awareness about Marshall's credibility in the footnotes of his article, recalling that, at one gathering of peers, "None of my dinner companions was aware of the later doubts cast on [Marshall's] methods, and in particular on his famous 'ratio of fire' finding."³⁸ Such responses may well be typical, as the "famous ratio of fire" continues to make its rounds as evidence in journals and books largely unabated by the character attacks on Marshall, either because scholars are unaware of them or because they remain unconvinced by them.

Marshall's "ratio of fire" numbers are not limited to casual reference by academics, but are also presently being used as the explicit intellectual basis for more ambitious new studies on war and human behaviour. The grandmaster of this particular movement is Dave Grossman, a former lieutenant-colonel and U.S. Army Ranger, military psychologist, and professor of military science. His two major books, *On Killing* and *On Combat* not only draw extensively upon Marshall's analyses, but predicate the entirety of their arguments on the twin assumptions that Marshall's observations on

37 Bernd Horn, "But ... It's Not My Fault!" - Disobedience as a Function of Fear," in Craig Leslie Mantle (Ed.), *The Unwilling and the Reluctant: Theoretical Perspectives on Disobedience in the Military*, (Kingston: Canadian Defence Academy Press, 2006), 175.

38 Simon Wessely, "Twentieth-century Theories on Combat Motivation and Breakdown," *Journal of Contemporary History*, Vol. 41, No. 2 (April 2006), 275.

the ratio of fire were completely accurate, and that they remain utterly unassailable as evidence. Grossman's scholarship is not always good, as his arguments are often misinformed and even lack internal consistency,³⁹ but he has achieved a great measure of success nonetheless. *On Killing* was nominated for a Pulitzer Prize, and Grossman has toured extensively giving presentations to military and police forces on the subject of his theories of human killing – which are founded largely upon Marshall's work. His work is even cited by the Canadian Forces, listed in the CF's *Guide to Reading on Professionalism and Leadership*⁴⁰ and has reportedly been prescribed by some members of the Forces' senior leadership as required reading for officers deploying overseas to Afghanistan.

Grossman's fundamental point is really an elaboration of Marshall's speculation on an innate resistance to killing within human beings. He discusses at length “the simple and demonstrable fact that there is within most men an intense resistance to killing their fellow man. A resistance so strong that, in many circumstances, soldiers on the battlefield will die before they can overcome it.”⁴¹ In *On Killing* Grossman attributes this resistance to killing to vague conceptions of a Freudian “Eros” life-force, though in a thematically identical article written for *Christianity Today* magazine he prefers to think of this resistance as “God-given.”⁴² Whatever the case, Grossman's work is inextricably connected both ideologically and empirically to that of S.L.A. Marshall, a fact that he acknowledges with a rather ham-handed defence of Marshall in *On Combat*:

39 For a more detailed critique of Lt.-Colonel Grossman's work, see: Robert Engen, “Killing Revisited: A New Look at *On Killing* and *On Combat*,” upcoming publication in the *Canadian Military Journal*, Summer 2008.

40 Canadian Forces Leadership Institute, *A Guide to Reading on Professionalism and Leadership*, (Canadian Defence Academy, 2006), 26.

41 Dave Grossman, *On Killing: The Psychological Costs of Learning to Kill in War and Society*, (New York: Back Bay Books, 1996), 4.

42 Dave Grossman, “Trained to Kill,” *Christianity Today*, (10 August 1998).

[Marshall's] work was widely accepted at the end of World War II when our Army consisted of a high ratio of veteran leaders who had led us through one of the greatest wars in history...Were all of these military leaders wrong? Did Marshall fool all of them, and then, somehow, a few people discovered the “truth”? ...Let us hope that our life's work gets better treatment after we are dead and gone, than to have people question our work, and everyone thereafter simply assume that we had intentionally lied.⁴³

While he is right in that more respect should have been afforded Marshall, Grossman's beliefs, that one should not question the work of dead men, and that a consensus of opinion among authorities is sufficient to determine truth on a matter, are fundamentally anti-historical. However, his position makes a degree of sense, if we recall that Grossman also asserts that what we know of military history – and the work of military historians – is all composed of lies.⁴⁴ Indeed, that Grossman has achieved such popularity and found enthusiastic reception within the military establishment should be worrying to historians. As we have seen, Marshall makes for a questionable source at best, and material derived from his possibly fictitious numbers is now being touted by Grossman as the answer to all the previously unknown elements of human combat. One must give Grossman credit where it is due, and both of his books – particularly *On Combat*, which uses less of Marshall and more of Grossman's own original research – contain valuable insights and data that truly do help us to understand human behaviour in war. But at the same time, the popularization of Grossman's work has brought Marshall's

43 Dave Grossman, *On Combat: The Psychology and Physiology of Deadly Combat in War and in Peace*, (PPCT Research Publications, 2004), 74-75.

44 Dave Grossman, “On Killing II: The Psychological Cost of Learning to Kill,” *International Journal of Emergency Mental Health*, Vol. 3, No. 3 (2001), 142. Grossman says, “You see there are two things men will often lie about. They will lie about what happened on that date last night, and they will lie about what happened to them in combat. And therefore that means that what we think is happening in combat is actually based on 5,000 years of...lies.” Grossman makes a similar and more recent comment in *On Combat*, saying that, “everything you think you know about war is based on 5,000 years of lies.” Grossman, *On Combat*, 10.

questionable data back into the public eye, where it is being used to actively formulate current military policy.⁴⁵ It seems that Marshall has achieved the historian's dream, as his work has come full circle to finding practical application not once, but twice.

That is, unfortunately, where the historiography of S.L.A. Marshall's work presently stands. While several historians have taken shots at Marshall's work or character, his "ratio of fire" remains accepted currency among military historians, and has inspired a new generation of questionable studies such as Grossman's. That these studies are being implemented as practical military policy is cause for concern due to their highly suspect foundation. So despite the efforts of historians such as Spiller and Smoler – who have indicated that they want no further part in the Marshall controversy⁴⁶ – to discredit S.L.A. Marshall and attack his work in the only ways that they thought they could, such criticisms have failed to take popular root, and the "ratio of fire" remains as pervasive in the literature as it has ever been. The associated dangers of misinformation becoming the basis of current military policy only makes the situation more unsettling.

What is needed at this juncture is a new approach to Marshall's "ratio of fire," one that moves away from the tired questions of the man's credibility or propensity for exaggeration. While Marshall's supporters may dismissively refer to his critics as opportunists trying to make their name on the tail of a great man,⁴⁷ the issue for historians should not be one of disparaging S.L.A. Marshall's character or reputation, or of questioning his motivations in providing the data that he did. Marshall was a groundbreaking writer, authored many excellent works, and left an indelible mark upon

45 For an example, see the work of Major David S. Pierson, published for the U.S. Army's Command and General Staff College, which is heavily derived from both Grossman and Marshall. David S. Pierson, "Natural Killers – Turning the Tide of Battle," *Military Review*, (May-June 1999).

46 John Marshall, *Reconciliation Road*, 278.

47 *Ibid.*, 170.

military history as a whole. But whether or not Marshall's present-day supporters will admit it, the “ratio of fire” continues to be, by far, the most-cited aspect of his work. And regardless of whether “Slam” was deliberately lying, was exaggerating his claims, or was simply wrong, there are serious doubts that can be cast on the integrity of those “ratio of fire” numbers. That historians and military policymakers continue to assign such importance to those numbers, and use them in the construction of history is therefore problematic. The issue of soldiers firing their weapons in battle is pivotal to all related discussions of human behaviour in war. Whether we like it or not, Marshall's “ratio of fire” remains central to this aspect of warfare, and therefore demands attention and scrutiny. To provide this scrutiny, military historians must start to look past character assassination and towards the accumulation of real empirical evidence that can stand either in support or in refutation of the ratio of fire statistics. That is the objective of this present study.

Chapter Three – Evidence and Methodology

The major problem with S.L.A. Marshall's "ratio of fire" work is that it falls into the logical fallacy of the negative proof. As the only evidence from the Second World War that no more than 15 to 20 percent of combat infantry fired their weapons comes from Marshall himself, the main defence of Marshall's theory is that the "ratio of fire" must be true because there is no evidence that it is not. The numbers presented in *Men Against Fire* have stood for the past sixty years, and weathered critical challenges more recently, on the virtue of being difficult to disprove.

This conundrum explains in part why historians have not felt inclined to engage Marshall with evidence of a more empirical nature. As alluded to earlier, the major works of social psychology that were produced from data taken during the Second World War, Samuel Stouffer's four excellent volumes of *The American Soldier*, are silent on the issue of soldiers firing their weapons. It was not a question posed to American troops among the hundreds of submitted survey questions. No other sources seem to exist that can independently verify Marshall's findings, though it would be very intriguing and would add a great deal of depth to the debate if such sources could be found. In any case, there are two possible interpretations to take from this. Marshall's supporters claim that it was his "genius" that allowed him to see what nobody else was able or willing to see; and his visionary nature accounts for why he alone noticed the unfavourable ratio of fire.¹ Skeptics can reasonably argue that basing a radical revision of what we know about human behaviour in war upon the supposed "genius" of one man would make for a shoddy practice of the discipline of history. However, by the same token little evidence

¹ Grossman, *On Killing*, 29-30.

exists directly contradicting Marshall's "ratio of fire" claims, and skeptics' criticisms have sometimes been disregarded. Marshall's assertions on combat can be neither proven nor disproven, inhabiting a no man's land in the discourse.

The simplest way out of this quagmire, of course, is through historical evidence; additional hard data or substantive testimonial evidence from the time that would either support or contradict Marshall. In the scientific community the negative proof is not considered a valid form of reasoning, and normally the burden of evidence would be upon those making the initial claims. Marshall's supporters have not been inclined to locate supporting evidence: when they do, it is usually "proof" not from the Second World War but from studies done during the Korean War that they claim vindicate Marshall. As a matter of fact, some of these studies do no such thing, and actually claim quite the opposite.² But in terms of proof, none has as of yet been produced that would confirm his precise ratio of fire observations from the Second World War, which adds credibility, if not conclusiveness, to the skeptics' case, as does the fact that few of Marshall's supporters have carried out the research necessary for independent verification.

Therefore, if the controversy over S.L.A. Marshall's ratio of fire is going to find satisfactory resolution then the burden of proof will have to shift to those who are

2 In 1978 psychologist Peter Watson presented data collected by the Human Resources Research Office (HumRRO) in Korea along the lines suggested by Marshall, looking for evidence of "fighters" and "non-fighters" in infantry units. On the basis of data by HumRRO in Korea, any group of 1,000 American soldiers was likely to contain 184 "outstanding fighters," 753 "adequate fighters," and 81 "non-fighters." Assuming that an "adequate fighter" would not be classified so if he was completely unwilling to fire his weapon in battle, the HumRRO ratio of fire would seem to indicate that around 92% of combat infantry were fighting, and only 8% were not. This was based on surveys and soldiers "rating" the performances of their comrades for verification. See: Peter Watson, *War on the Mind: The Military Uses and Abuses of Psychology*, (New York: Basic Books, 1978), 46-52. Marshall's own revised ratio of fire for the Korean War had placed the percentage of U.S. soldiers firing their weapons at around 50%, based on his usual unscientific mass interview techniques. These studies reach radically different conclusions, and the chances are good that at least one of them is incorrect. See: Marshall, *Infantry Operations & Weapons Usage in Korea*, 4-6.

skeptical of his claims. Admittedly this is difficult ground to tread. There is likely never going to be the one “magic bullet” piece of evidence that completely contradicts Marshall's findings, simply given that there were no parallel studies being done that asked precisely the same question apropos soldiers making use of their weapons. What has perhaps discouraged historians in the past is this realization: that there is no quick and easy way to refute or confirm Marshall's “ratio of fire.”

That said, there are ways to conduct a comprehensive examination of the “ratio of fire,” provided that one is willing to take the longer route to the issue. There is more than sufficient documentary evidence in existence to test the veracity of Marshall's observations, rather than resorting to character assassination or the discrediting of his methodology.

This present study was launched with an eye towards locating and compiling the documentary evidence necessary to establish the truth of the “ratio of fire,” and discovering what this can tell us of human behaviour in war. There is no subtext of slander towards S.L.A. Marshall, no implication intended that he was a liar or a cheat, or that he deliberately fabricated any evidence; such questions have been dealt with at length, and have proven more destructive than enlightening. In fact, this study does not even seek to directly comment upon his observation of American soldiers. What it has found is that, critically, Marshall's explicit attempts to universalize his “findings” on the ratio of fire – to claim that they applied to the whole of human experience rather than to just the localities he was observing – are incorrect. The 15 to 20 percent “ratio of fire” cannot be generalized to the whole of human history; it does not even apply to all of the armies fighting during the Second World War. One cannot even generalize and say that

it applied to all of the Allied armies fighting in Europe: this present study, focused exclusively on data from the Canadian Army, has found that S.L.A. Marshall's findings and numbers are inapplicable to the Canadian war experience.

The Surveys

The core of this study is a series of surveys filled out by junior and senior officers who had seen active combat experience in the Canadian Army in 1944 and 1945. These “Battle Experience Questionnaires” were created and distributed by the Tactical Investigation section of the Canadian Military Headquarters (CMHQ) and dealt with many minute tactical details of combat at the company, platoon, and section levels. Their distribution during the war was meant to provide the investigation and training sections of CMHQ with feedback on how training techniques were being applied on the battlefield, and what could be improved upon. They were meant to find application while the Second World War was still being fought. The actual questionnaires are reproduced in Appendix A of this work, but prominent questions include weapons usage and effectiveness, night operations, mental and physical fatigue, co-operation among combat arms, morale issues among the troops, and field communications. In addition to the survey questions themselves, most of the officers who filled them out attached addendum pages of personal notes, clarifications, elaborations, examples, and even sketched diagrams. Many had a great deal to say; some officers attached upwards of a dozen pages of addendum notes to their surveys.

The surveys were a Canadian Army Overseas undertaking, and encompassed all of the combat arms, including infantry, armour, artillery, and engineers. There were approximately three hundred of these completed surveys that could be located in the

Library and Archives Canada (LAC), and of those over half – 161 to be precise – were filled out by officers of the infantry or airborne services, from around twenty different regiments in both the Mediterranean and northwest Europe theatres in 1944 and 1945. The surveys are heavily prejudiced towards officers who had been wounded on the front lines: most of them reported that they were in military hospitals while filling out the questionnaires, though none of them discuss the circumstances of their infirmity in their commentary. While a few reminisce about particular actions, this is always to illustrate some point, and there is very little yarn-spinning and few personal “war-story” style accounts. The surveys were filled out by professionals who stuck to the gritty tactical details of the war and limited their own comments that were not directly related to how the war was being fought tactically on the ground – conscious, perhaps, that this was an opportunity for their experience to make a larger impact on the military establishment.

That the questionnaires are all about the details of the sharp end of combat and do not delve into personal narratives about “life at the front” or similar portrayals of human interest – which appeal to popular audiences and social historians – perhaps goes some ways towards explaining why they have never seen extensive use before now. This is, to the best available knowledge, the first study to make detailed use of them. Historians Bill McAndrew and Terry Copp evidently located them in the archives almost twenty years ago, but they are only mentioned briefly and in passing in their joint work, *Battle Exhaustion*.³ No other major works – including later books on the Second World War by

3 See: Terry Copp and Bill McAndrew, *Battle Exhaustion: Soldiers and Psychiatrists in the Canadian Army, 1939-1945*, (Montreal & Kingston: McGill-Queen's University Press, 1990), 99. McAndrew mentions them again five years later in a chapter published for a compilation, though the mention is again in passing. See: Bill McAndrew, “The Soldier and the Battle,” in J.L. Granatstein and Peter Neary (Eds.), *The Good Fight: Canadians and World War II*, (Toronto: Copp Clark Ltd., 1995), 134. There may be other more substantive use of these documents in other historical works, but if so I am unaware of them.

both McAndrew and Copp – make any substantial use of these documents. This is rather surprising, since collectively these surveys tell us a great deal about the Canadian war on the ground in Europe, and compose a study comparable to – and possibly more genuine than – S.L.A. Marshall's for the U.S. Army. Individually, the surveys tell us scattered stories and individual experiences, but collectively they tell us a great deal about the Canadian experience of war at the tactical level. However, unlike Marshall's studies they are not specifically battle narratives, and do not track the “history” of any single engagement. Rather, they query officers on the sum of their battle experience to that point in the war, and ask them to give answers and draw conclusions based upon that experience.

Colonel C.P. Stacey, Canada's official historian of the Second World War, correctly suggested that in the matter of weighing evidence, “the vital element is that of time.”⁴ The validity and trustworthiness of battlefield testimonials and memories tends to decline sharply with the passage of years, so that interviews with soldiers carried out years or decades after the fact are of questionable value.⁵ It is one of the tragedies of oral history that memories erode with time, and cannot always be counted on to accurately recount events that occurred long ago, a point used by Marshall's supporters to deflect the potential criticisms of the “ratio of fire” brought up in Harold Leinbaugh's *The Men of Company K*.⁶ The phenomenon of memory degradation has hampered many studies attempting to deduce the behaviour of combat soldiers in the Second World War, and has

4 C.P. Stacey, *A Date With History*, (Ottawa: Deneau, 1983), 229-230.

5 For a good discussion, see John A. English, *The Canadian Army and the Normandy Campaign: A Study of Failure in High Command*, (New York: Praeger, 1991), 2-3.

6 John Marshall, *Reconciliation Road*, 190-194. Leinbaugh and John D. Campbell carried out interviews with US Second World War veterans four decades after the end of the war, asking them to recall their actions. While it may make for an interesting account, John Marshall is correct in his assertions that “it has definite shortcomings as a way to capture history.” See Harold P. Leinbaugh and John D. Campbell, *The Men of Company K*. (New York: Morrow, 1985).

limited their potential usefulness.⁷ One of the undeniable strengths of Marshall's interview techniques was that the interviews were carried out hours, days, or weeks after the event in question, so that memories were still fresh and the details of what actually happened could be captured with an expectation of some accuracy. These Canadian surveys share the immediacy of Marshall's work, having been filled out days, weeks, or a few months after the convalescing officers had last seen battle. While they cannot claim quite the same degree of immediacy that Marshall had with his post-combat interviews, they remain in very close temporal proximity to the combat actions that they discuss. In terms of historical veracity, the Battle Experience Questionnaires are likely as reliable a source as any of Marshall's interviews, perhaps even more so, since they represent the kind of primary documentary evidence that is lacking in Marshall's work.

The surveys were sent out exclusively to commissioned officers of the Canadian Army; no responses from private soldiers or non-commissioned officers are included among the surveys in the LAC archives. They were sent out to junior and senior officers holding the ranks of captain, major, and lieutenant-colonel, though it should be noted that many officers indicated that their combat experience had begun at the rank of lieutenant, and they had subsequently been promoted. The infantry officers, upon whom this study is focused, reported that they had commanded formations ranging from platoons (for lieutenants and captains) to companies to, in a few cases, battalions within the regiment, though often they held second-in-command positions in their units as well. The great majority had spent time commanding groups of around thirty to one hundred soldiers.

7 For a good example, see: Beatrice J. Krauss, *et al.*, "Factors Affecting Veterans' Decisions to Fire Weapons in Combat Situations," *International Journal of Group Tensions*, Vol. 3, No. 3-4, (1974), 105-111. While the goal of the article – to determine whether social education can influence soldiers to differentially regard the cue to fire their weapons – was commendable, its central weakness was relying on the memories of veterans who had not seen combat in 15-20 years for precise details on weapons useage.

The surveys are, however, open to a criticism that should be addressed immediately: that it is prejudiced towards the perspective of officers. Undeniably this is not the voice of the “common soldier” that S.L.A. Marshall claims to have captured so effectively; these are the voices of the men who led the “common soldier” into combat. Other testimonials from private soldiers may well exist, but the aim of this particular survey was to generate feedback from the group that, it was clearly judged, could take a higher-level view of the tactical situation. However, the critique could still be made that officers – even junior ones – would not necessarily have known what was going on with the troops under their command, and that the surveys therefore prove nothing about the “ratio of fire”. After all, did not S.L.A. Marshall himself report to this effect? On this issue, *Men Against Fire* says that:

In the course of holding post-combat mass interviews with approximately four hundred infantry companies in the Central Pacific and European Theatres, I did not find one battalion, company, or platoon commander who had made the slightest effort to determine how many of his men had actually engaged the enemy with a weapon. But there were many who, on being asked the preliminary question, made the automatic reply: “I believe that every man used a weapon at one time or another.” Some added that wherever they had moved and viewed, it had seemed that all hands were taking an active part in the fighting.⁸

According to Marshall, of course, the subsequent group interviews “proved” the officers to be utterly incorrect, though he goes on to say that afterwards, “there was no case of a commander remaining unconvinced that the men had made a true report.”⁹ By Marshall's estimation, combat officers would not make a trustworthy source.

But this claim needs to be examined in more detail, because as with much of

⁸ Marshall, *Men Against Fire*, 53-54.

⁹ Ibid., 54.

Marshall's work it rests upon some peculiar assumptions. He claims that soldiers will generally fire when an officer or NCO is standing over their shoulder yelling orders or trying to “move up and down a fire line booting his men until they use their weapons.”¹⁰ Dave Grossman, Marshall's most vocal modern supporter, takes Marshall's point from *Men Against Fire* and runs with it in a chapter of his own book, talking about the proximate power of leadership and authority in enabling battlefield killing, ie., as the proximity to a leader increases, the soldier's desire or ability to fire his weapon increases.¹¹ The idea is that while the average American soldier in the Second World War might fire his weapon while being watched by an officer, he would stop as soon as the officer went further down the line.

This is a convenient but faulty supposition. It is convenient in that it, with a considerable economy of effort, supposedly discredits a group that has been known to dissent and disagree with Marshall's views, the infantry officers.¹² Their opinions and observations from combat situations are dismissed solely on the grounds that “Slam” claimed to have been a better observer than they were, and managed to publish a book that said so. But this idea remains flawed even on a simple logical level. Its central assumption is that private soldiers were always aware when an NCO or officer was observing their actions in battle. The officer who went out of his way to identify himself to all nearby troops – let alone announce his presence among them – was an officer who was not going to survive long on the battlefield due to enemy snipers. Further, it assumes that even if officers did not observe this non-firing behaviour themselves, that they would not hear reports of it from NCOs (who, Marshall explicitly claims, *were* typically aware

¹⁰ Ibid., 58.

¹¹ Grossman, *On Killing*, 141-148.

¹² See: Leinbaugh, *The Men of Company K*.

of the low firing ratio among their men¹³), and that they would not observe the tactical effects of this ratio of fire. One of Marshall's central tenets in *Men Against Fire* is how ineffective infantry companies in the Second World War were with a mere 15% firing rate in battle, but he fails to explain how the fire effects of this ratio could be completely lost on officers. If junior and senior officers were entirely unaware of such a gross tactical inadequacy on the part of their own troops, then it speaks to a shortfall in professional competence to a very serious degree. Finally, if the non-commissioned officers were aware of their troops' inactivity but failed to flag this as a problem to their commanding officers, then it speaks poorly of their professional competence and integrity as well. Therefore the conclusions are that either all infantry officers in the U.S. Army were unobservant and ineffective, or else that "Slam" made an error in dismissing their battle observations as immaterial.

It is probably more appropriate to operate on the assumption that the more charitable of these conclusions is true, and believe that Marshall did not mean to slander the professionalism and competence of the officer corps. However, there is strong evidence to indicate that officers, particularly the junior and senior officers encompassed by the Battle Experience Questionnaires, were far more tactically aware than Marshall gives them credit for, at least in the experience of the Canadian Army. It is a matter of record that casualties among infantry officers were disproportionately high during the fighting in northwest Europe in 1944-45, who at the platoon and company level were on the front lines with their men.¹⁴ For evidence of this one need look no further than the questionnaires themselves: most of the officers filling them out were doing so in hospital,

¹³ Marshall, *Men Against Fire*, 57-58

¹⁴ Terry Copp, *Cinderella Army: The Canadians in Northwest Europe, 1944-1945*, (Toronto: University of Toronto Press, 2006), 6.

having been wounded in battle and sent back to England. Furthermore, entirely separate studies carried out by the Canadian Ministry of Supply's Small Arms Liaison officers and Small Arms Users Committees during the war indicated a greater need for infantry officers to be able to defend themselves at the front. The Users Committee proposed equipping officers with automatic carbines instead of pistols, and surveys from equipment test-trials carried out by infantry and tank officers of the 5th Canadian Armoured Division indicated that a greater fire capacity for officers was strongly preferred. Officers in staff, medical, and signals branches, on the other hand, elected to keep their sidearms instead of carbines.¹⁵ That is to say, while officers facing direct combat wanted sufficient firepower to be able to actively take part in the battle, the Small Arms Committee found that officers elsewhere were satisfied with the “moral support” offered by the .38 pistol, despite being terrible shots with it even on the target range.¹⁶ Combat infantry officers were simply far more likely to be forward with the troops, in a position where they could use their weapons.

Furthermore, there are plenty of examples of junior and senior officers “leading from the front” and personally directing the tactical movements of their men. Historian Terry Copp's research has uncovered plenty of examples where men with ranks of up to major personally carried out reconnaissance and led their companies into battle.¹⁷ Copp is supported by the evidence presented in this study's own Battle Experience Questionnaires: many officers, reporting on their own actions and the actions of those around them, were regularly directing and leading from the front. In particular the

15 Weekly Reports, Canadian Small Arms Liaison Officer Overseas, 1941-1945, Library and Archives Canada, microfilm reel C-5167.

16 Ibid. Firing trials with the .38 pistol showed that officers were very poor shots with that weapon, due in large part to the general ineffectiveness of the weapon itself. The committee concluded that, “other than moral support they offer little security.”

17 Copp, *Fields of Fire*, 53.

officers surveyed spoke about the necessity of their presence (or at least the presence of “an officer”) on active patrols during the long periods where the front was static, as it frequently was both in Italy and Normandy. Captain G.C. Watt of the Royal Winnipeg Rifles, commander of a carrier platoon, insisted that for infantry reconnaissance patrols, “it was found imperative to have an officer in charge.”¹⁸ Two French-Canadian officers, Captain Charles Levesque of Le Royal 22e Régiment and Major G.P. Boucher of Le Régiment de la Chaudière both noted that junior officers always accompanied patrols, even for minimal-strength scouting missions of only two or three men.¹⁹ Captain Mark Tennant of the Calgary Highlanders differed in opinion somewhat, and emphasized that while everyday scout patrols – meant to locate the enemy and fall back – could be carried out by NCOs, “Fighting Patrols” sent out to engage the enemy's static positions were always led by a commissioned officer.²⁰ While there is some disagreement on the point of whether or not officers led patrols, this merely reflects the differing practices of regiments, and even of battalions and companies within a regiment. The overwhelming impression from the surveys, however, is that junior officers were leading many of the forward actions. Major Harrison of the Calgary Highlanders, a company commander, came to a more general conclusion on the lessons learned from his experience in battle: that “men will follow their commanders if well led.”²¹ This seems to have been a truism in the Canadian Army during its battles in Europe, as the evidence indicates that officers were, in many cases, leading their troops from the front.

We are left with the conclusion, then, that junior officers in the Canadian Army

18 Battle Experience Questionnaire, A/Captain G.C. Watt, LAC RG 24, Vol. 10450, 173.

19 Battle Experience Questionnaire, Major G.P. Boucher, LAC RG 24, Vol. 10450, 224; Battle Experience Questionnaire, Captain Charles E. Levesque, LAC 24, Vol. 10, 450, 259.

20 Battle Experience Questionnaire, Captain Mark Tennant, LAC RG 24, Vol. 10450, 209.

21 Battle Experience Questionnaire, A/Major Harrison (no first name given), LAC RG 24, Vol., 10450, 191.

tended to place themselves in the same position as their troops. There is evidence from the questionnaires – supported by the research of other historians – that many led from the front, and would have been in a position to observe the actions (or inactions) of their men. Since officers would have been in a position to observe the lackluster “ratio of fire” had it existed, then one of the potential criticisms, that officers were never in a position to observe the men, is dispelled, in the Canadian case at least. We are then left with Marshall's implication that officers were unsuited to their professional duties by failing to observe the low firing rate of their riflemen, when they were clearly in a position to have done so.

Now, however, it is time to be more charitable to the officers. Basic training for Canadian officers has been shown to be flawed, but at the same time so was training for the entire Canadian Army in the years before 1944.²² It is clear that the abilities of the various divisional commanders was highly variable. But at the same time, as Copp points out, based upon his exhaustive primary research, “it seems reasonable to argue that the overwhelming majority of commanding officers were fully competent for their appointments...anyone familiar with the details of the campaign can list dozens of young officers who rose to the challenge when required to command a company, squadron, or battalion.”²³ The benefit of the doubt should be given to Canadian officers that they were not, to a man, negligent in their observations of their own troops. They may not always have been outstanding, but as a whole the officers represented a disciplined, professional body whose leadership and competence in command helped contribute to the Allied victory in the European Theatre of Operations.

22 For an assessment, see: English, *Canadian Army and the Normandy Campaign*, 71-72.

23 Copp, *Fields of Fire*, 266-267.

In addressing the potential critique of this study based upon S.L.A. Marshall's statements about officers, then, a few conclusions can be reached. As discussed, Marshall believed that officers were not observing the unfavourable "ratio of fire." But such an accusation necessarily assumes that officers were never in a position to adequately observe their men, and would be receiving no reports from their NCOs on the low rate of fire, a serious tactical issue worthy of their attention. At least in the Canadian divisions, junior and senior officers were frequently leading from the front and were sharing the risks and combat experiences of their troops, and shared a disproportionately high ratio of casualties in the process. Given Canadian successes in the campaign, it is not too much of a leap to presume a baseline competency and professionalism amongst both the Canadian officer corps and the NCOs during the Second World War. It should also be remembered that Marshall claimed that even under the best of circumstances in the most elite units, only a maximum of 25 percent of soldiers fired their weapons.²⁴ If one can interpret this as meaning that the "best of circumstances" included the presence of an officer nearby, then only a quarter of riflemen fired even under direct officer observation. So clearly, one way or another, combat officers should realistically have been able to discern that 85 percent of their soldiers did not fire their weapons. But since *Men Against Fire* claims that "not one" of the officers Marshall spoke to was aware of the problem, we are left with one of two conclusions: either a conspiracy existed among troops deliberately designed to fool officers and NCOs, or else S.L.A. Marshall was in error.

This leads to one of the central points of the Battle Experience Questionnaires. Though what the surveys say is far more interesting than what they do not, perhaps the

²⁴ Marshall, *Men Against Fire*, 54.

single most damning piece of evidence against Marshall is their utter silence regarding the “ratio of fire.” Of the 161 infantry officers whose surveys are stored in the National Archives, not a single one of them makes even one reference to anything resembling S.L.A. Marshall's fire ratios. Among the multitude of complaints, suggestions, criticisms, and admissions of ineffectiveness that the surveys provide – and they are many, owing to the officers' clear need to express their opinions on tactical issues – there is not one complaint about the effectiveness of infantry fire, and certainly no indication that the central problem of the battlefield was men not firing their weapons. Of the 161, only one officer, Captain Gordon Crutcher, who was commander of a support company in the Carleton and York Regiment in Italy, marked in his survey that he considered the basic infantry rifle to be a “particularly ineffective” weapon. Crutcher wrote “marksmanship indifferent” as his explanation for this answer, but gave no further elaboration on the point in his attached notes.²⁵ He is literally alone in complaining about marksmanship and in implying that there was any ineffectiveness of infantry rifle fire. Many others complained about individual weapons, particularly the Sten sub-machine gun, which was plagued by technical and machine difficulties, but in these cases the complaints were leveled against the weapon itself rather than the volume of fire being produced by soldiers carrying them. No other Canadian officer being surveyed so much as implies that non-firing soldiers was a significant problem, or even a minor one. In fact, and as shall be discussed later in this study in more depth, it is the opposite that is commented upon in the surveys: that soldiers were firing *too much*.

25 Battle Experience Questionnaire, Captain Gordon A. Crutcher, LAC RG 24, Vol. 10450, 207.

Methodology

Some mention should be made here of the methodology used in collecting and compiling the data for this study. All data from the Battle Experience Questionnaires is derived from Volume 10450 of Record Group 24 in the Library and Archives Canada. As previously mentioned, there were approximately 300 completed surveys in this file, 161 of them from the infantry, with the remainder from the armoured, engineer, and artillery branches. Although the other branches would no doubt, and hopefully someday will, make for other fascinating studies, the limited scope of this work encompassed only the infantry surveys. Every individual survey with its addendum notes was assigned a sequential reference number by the person conducting the survey during the Second World War, though the reference numbers were shared between the infantry and the other branches. In the second half of 2007, the author of this work took some 2,273 digital images of the surveys in the archives, documenting each infantry officer's survey answers as well as any other attached notes and comments that they provided on looseleaf. These images were taken as carefully as possible so as to retrieve and record all possible information from each survey.

Once the surveys were recorded in their entirety, two things were done. First, all of the roughly “quantitative” answers from the questionnaires themselves were recorded in computer spreadsheet format. These typically allowed for “yes,” “no,” or “not certain” answers. The questions included ones on weapons effectiveness, tactical fire and movement, German counter-attacks, artillery and air support, troop morale, average section strength, and the prevalence of close-quarters fighting, among others.²⁶ The

26 See sample questionnaires provided in Appendix A. Specifically: Weapons effectiveness – survey “H” question 1; tactical fire and movement – survey “H” question 11; German counter-attacks – survey “H” question 8; artillery and air support – survey “H” questions 12 and 7 respectively; troop morale – survey “A” questions 1, 2, and 3; average section strength – survey “H” question 10(a); close-quarters fighting

officers' answers to these questions were tabulated through the spreadsheet, and results can be viewed as a whole or broken down according to theatre of operations, regiment, dates spent in combat, or even rank, should one choose to do so. While this study makes no claim to be statistically representative of the entire Canadian Army in the Second World War, officers from over twenty different regiments were surveyed, and given the relatively small size of the Canadian armed forces that saw combat in the war, they amount to a modest but important statistical sample of the combat officers in the army.²⁷ As shall be seen later, these answers have been statistically compiled to allow for a general view of the experiences of these combat veterans, and allow us to identify patterns and tendencies within their stated experiences. Now, many of the answers should not be taken as precise statistics. In one section of the survey the officers are asked to estimate the number of times specific enemy weapons (rifles, mortars, artillery, tanks, etc.) have been used against their unit.²⁸ Some give specific numbers of times, but most respond with “often” to denote many instances of the weapon being used against them, or “never” to indicate that they had never seen it used in battle. The point here is not to compile precision statistics or try to determine that the average officer witnessed x weapon being used y number of times against his unit. Rather, the point of including this data is to indicate broad trends of what multiple officers generally experienced in combat. It is not relevant whether the average officers remembered being engaged by German armoured cars 3 or 4 separate times. What is more helpful to this study is knowing that almost every officer surveyed encountered German rifle, mortar, and machine-gun fire,

– survey “H” question 10(d).

27 According to Terry Copp, around 100,000 men were on the strength of First Canadian Army preparing for Operation Overlord, the invasion of France. Less than 30,000 of these, including both officers and men, would be involved in close combat in any way. Copp, *Fields of Fire*, 15.

28 See Appendix A, survey “A” question 1(a).

and that mortars were overwhelmingly marked down as the most devastating weapon to the morale of Canadian soldiers. The statistics presented in this study are therefore useful for indicating broad trends that can be interpreted and analyzed.

Second, any personal comments, elaborations, and suggestions by the officers that fell outside of the rigid survey structure were frequently attached on looseleaf paper as an addendum; all of these notes were transcribed and recorded by hand. Although there were a very small minority that were unreadable due to illegible handwriting, faded pencil marks, or, in a handful of instances, faulty digital imaging discovered after the fact (*mea culpa*), the great majority were successfully transcribed. Many of the officers had a great deal to say, attaching up to a dozen looseleaf pages of commentary, tactical map sketches for visual aid, and a few illustrative examples. Of the 161 officers, 98 of them attached legible addendum notes to their surveys (the remainder only filled out the surveys and attached no additional comments, or those comments were present but illegible). These comments provide the vital qualitative corollary to the more quantitative statistical data garnered from the answers to the survey questions themselves. They provide personal commentary on the same tactical issues, with examples that go beyond the survey questions and provide the historian with a more rounded view of the officers' combat experiences.

The aim of this study will be, wherever possible, to combine these two aspects of the questionnaires, presenting what statistical evidence can be gleaned from the breadth of the survey and supporting it with the comments and critiques of the officers. This will allow for both an empirical and a qualitative study to be done of the Battle Experience Questionnaires. While these surveys do not tell us everything about the experience of the

Second World War on the ground, they bring fresh insight to the historical debates about the war. While they can and hopefully will be used in the future to support broader studies, for now it is sufficient that these surveys can demonstrate, as contemporary documentary evidence, that S.L.A. Marshall's "ratio of fire" was inapplicable to the Canadian Army during the Second World War.

Chapter Four – Combined Arms

Whether he intended his remarks to be or not, S.L.A. Marshall's comments on the combat effectiveness of the average combat infantry soldier in the Second World War were particularly damning. A 15 percent firing ratio would represent a catastrophic ineffectiveness amongst infantrymen; specifically American infantrymen, *Men Against Fire* tells us, but this number was just as easily applied as a universal constant among other contemporary armies.¹ His conclusions are perhaps easier to believe when we account for some of the ways that the Second World War exists in the popular imagination. In contrast to the First World War, which is popularly portrayed as a brutal infantry slogging match in the trenches on the dense Western Front, the military actions of the Second World War are usually viewed as more mobile, flexible, and decisive, with clear winners and losers replacing years of continuous infantry stalemate. Between 1939 and 1945 the world became intimately familiar with the new power of tanks and airplanes, and just as the trenches became the symbolic icon of the First World War, these new products of industrial mechanization are the icons of the Second World War. When one places the role of “soft” infantry next to the armoured firepower of tanks or the deadly majesty of a thousand-bomber raid on Germany, one might perhaps be more inclined to accept Marshall's assertions on the “ratio of fire.” What would it matter if only one in five infantrymen were shooting their weapons, when the obviously overwhelming firepower of tanks, artillery, and airplanes were so readily available? Were these not the powerful weapons that broke the tactical and strategic problems of deadlock from the First World War, and ultimately won its sequel? Marshall's theory

¹ Grossman, *On Killing*, 16.

seems more reasonable when presented next to such perceptions of the Second World War.

These are, however, flawed perceptions. Though enthusiasts of the “revolution in military affairs” and other advocates of technology do not like to admit it, the methods by which the Second World War was fought on the ground bear striking resemblance to the tactical art of the First World War. The German *blitzkrieg*, the “lightning war” strategy that has preoccupied many historians, was tactically dominant only in the first years of the war, and has received a disproportionate amount of attention given how it ultimately bled itself to death in the snows of Russia and the sands of North Africa. For all of the strategic bombing, the mobility and maneuver, and the new applications of technology, the most important parts of the war, including both the eastern and western “victory campaigns” that brought Germany to its final collapse, were fought and won on foot by infantrymen. From 1942 onwards the Second World War in Europe was a war of attrition, particularly in the west, and the battles being fought bore more than a passing resemblance to those of the First World War on the tactical level.

This is a fact that sometimes goes unappreciated by scholars. In the historiography, the infantry is sometimes portrayed as the lesser partner of the combined arms team, relegated to the unimportant dirty work as a result of the efficacy of artillery, armour, and air support. Studies with a focus upon technology tend to be particularly near-sighted in this respect. This is in part the historiographical legacy of those military theorists who developed the principles of mechanized warfare early in the twentieth century. Major-General J.F.C. Fuller, a British officer who organized the first British tank corps during the First World War, was a significant proponent of armoured warfare

and movement, and the idea that static tactical engagements could be avoided by the swift application of armoured force and air power. Fuller was also, coincidentally, a good friend of S.L.A. Marshall, and indeed dedicated one of his inter-war books, *Machine Warfare*, to Marshall. Writing as a historian late in his life, this “prophet of armour” naturally focuses on these “decisive” aspects of the Second World War, notably the years 1939 to 1941, to declare that tanks and air power had revolutionized warfare in the form of the German *blitzkrieg*. “[*Blitzkrieg*] was to employ mobility as a psychological weapon,” Fuller tells us, “not to kill but to move; not to move to kill but to move to terrify, to bewilder, to perplex, to cause consternation, doubt and confusion in the rear of the enemy.”² While Fuller devotes many pages to the discussion of *blitzkrieg* and its tactical success, his narrative skips all tactical details from the latter half of the Second World War, particularly the eventual failure of the armoured warfare he cherished, and in his work Fuller relegates the role of the infantry to one of supporting the “sudden eruption of squadrons of fast-moving tanks.”³ Similarly, Sir Basil Liddell Hart, another inter-war architect of armoured warfare theories, though presenting a generally more balanced account in the text, still concludes his *History of the Second World War* by emphasizing the tactical power of armour and “indirect warfare” and minimizing discussion of the infantry-based battles of attrition that ultimately won the war.⁴ The clear implication was that infantry had become, to these historian-theorists, the junior partner of combined-arms warfighting, displaced by armour and air power in importance and relevance.

2 J.F.C. Fuller, *The Conduct of War 1789-1961: A Study of the Impact of the French, Industrial, and Russian Revolutions on War and its Conduct*, (New Brunswick, NJ: Da Capo Press, 1992), 256-257.

3 Ibid., 243.

4 Basil H. Liddell Hart, *History of the Second World War*, (New York: G.P. Putnam's Sons, 1970), 84-85, 701-713.

Modern historians have fallen into the same rut when discussing the Second World War. Defence analyst Robert O'Connell's classic work on weapons and warfare, *Of Arms and Men*, skips over all real discussion of the role of infantry during the Second World War, claiming instead that it was weapons and technology that won the war against Nazi Germany. The Soviet T-34 tank in particular is credited with almost single-handedly destroying the Third Reich.⁵ More recently, historian Max Boot's book *War Made New: Technology, Warfare, and the Course of History* extols the virtues of the Germans' mechanized *blitzkrieg* of 1939-1941, claiming that, "with the rise of mechanized forces, the art of maneuver could once again be practiced as skillfully as it had been by Frederick the Great or Napoleon Bonaparte. With their lightning victories, Hitler's legions had shown that force of arms could win wars, not just battles." Boot compares this realization of the power of technology unfavourably with the "senseless struggle for a few yards of ground" that characterized the First World War.⁶ Though he acknowledges an ultimate failure of the *blitzkrieg* style of mechanized warfare, Boot writes this failure off as the result of simple numerical superiority on the part of the Allies. In a slightly different vein, Carlo D'Este explicitly argues that while infantry was important, Allied infantry specifically was very poor in terms of quality. While the German infantry might have been highly skilled, Allied infantry was badly trained and tactically incompetent, he claims, and had it not been for the Allies' preponderance of air and artillery firepower, the war would have been lost. "[Allied] assault troops," D'Este tells us, "hobbled by their tactical unfitness, used the artillery as a crutch," as they were

5 Robert L. O'Connell, *Of Arms and Men: A History of War, Weapons, and Aggression*, (Oxford: Oxford University Press, 1989), 286-288.

6 Max Boot, *War Made New: Technology, Warfare, and the Course of History*, (New York: Gotham Books, 2006), 235-236.

largely unable to fight forward on their own.⁷ The war was therefore won through overwhelming artillery and material superiority on the part of the Allies, with the infantry – at least Allied infantry – again condemned as functionally irrelevant to the war.

This portrayal of combat in the Second World War, while enduringly popular, is out of touch with the realities of that conflict. It is tempting to view the war through the lens of technology and to portray it, as many of the above writers have done, as a distinctly technological watershed, but to do so is to discount what the evidence tells us about the nature of the conflict. While inglorious when set next to armoured *blitzkrieg*, strategic bombing, and Nazi secret weapons, the evidence has always shown that infantry operations were central to the conduct of the war in Europe, and that the war was won with tactics not far removed from what was being practiced in 1917.

This is particularly true of the Canadian military during the war. Not seeing substantive combat before 1943 (excluding Dieppe, which involved only a single division), the Canadian army experienced nothing resembling Fuller's armoured *blitzkrieg* during its three years of major combat operations. As historian John English has demonstrated, the *blitzkrieg* concept was thoroughly discredited by the time Canadian ground forces entered the fray; in fact, English claims, the German success at war had less to do with the “sudden eruption of fast-moving tanks” and much more to do with excellent theories and practice of all-arms co-operation.⁸ Even the best models of tanks proved to be ridiculously vulnerable to infantry units appropriately armed and intelligently employed. Pre-war British (and by extension Canadian) doctrine reflected the 1930s decision to mechanize the British army's cavalry regiments, and early in the

⁷ Carlo D'Este, *Decision in Normandy*, (New York: Dutton, 1983).

⁸ English, *The Canadian Army in Normandy*, 165. Also: John A. English, *On Infantry*, (Praeger: New York, 1984), 67-70.

war armoured units tended to operate as cavalry would: as a free-ranging exploitation force. Armoured commanders were still imbued with the idea of the concentrated cavalry charge, the weapon of physical shock.⁹ Pre-war doctrine was written accordingly, with infantry training and tactical manuals issued in 1937 and 1938 emphasizing the power of tanks to “break through the enemy's front defence.”¹⁰ The predilection of British tank squadrons in the North African campaign to act as though they were cavalry units, charging forward without support – or, as Niall Ferguson colourfully put it, treating “every operation, regardless of its dangers, as...a foxhunt” – played into enemy hands.¹¹ The Germans were quite content to let British armour tear itself apart against their line of infantry and anti-tank gun defences.¹² The kind of rapid-advance armoured warfare that Fuller and Liddell Hart had vociferously advocated at the time – and subsequently championed in their retrospective histories – was actually relatively easy for well-equipped and -trained infantry to blunt or destroy entirely. Moving tactical doctrine away from the “cavalry” style of armour employment was in fact one of the steps the British Army took that reversed their fortunes in North Africa, starting in 1943.¹³ So by the time that Canadian divisions joined the major operations, Allied doctrine had already definitively determined that infantry would carry the greater burden of the fighting.

The evidence from the Battle Experience Questionnaires supports English's interpretation in this regard. The officers surveyed had much to say about the impact of combined arms upon the Canadian experience of war, confirming that while most of them

9 Ibid., 163-165.

10 Great Britain, General Staff, War Office, *Infantry Training: Training and War, 1937*, (London: His Majesty's Stationery Office, 1937), 121-125; Great Britain, General Staff, War Office, *Infantry Section Leading, 1938*, (London: His Majesty's Stationery Office, 1938), 16-17.

11 Ferguson, *The War of the World*, 523.

12 English, *Canadian Army and Normandy*, 165-167.

13 Ibid., 166.

had experience operating in conjunction with armour, artillery, and air support, all three of these arms had serious tactical limitations. None of the other branches of the combined arms team supplanted the need for strong infantry forces to engage the enemy and seize ground, nor were any of the other branches – in the Canadian experience – sufficiently effective to eliminate the need for infantry small arms fire in the advance. While more specific details on infantry combat and fire will be provided in Chapter 4, it will be demonstrated in this chapter that the limitations of other elements of the combined arms team meant that there was a vital need for infantry small arms firepower on the battlefield. Had S.L.A. Marshall been right, and had this firepower not been provided, then the Canadian campaigns in the Second World War would have been abject failures. Because of the limitations of its tanks, artillery, and air cover, the Canadian Army had to place the utmost reliance upon the strength of its infantry operations to compensate.

The Big Guns: The Limits of Artillery

Carlo D'Este's comments about the infantry using artillery fire “as a crutch” are in some ways quite accurate, as Allied tactical doctrine from 1943 to 1945 was structured around the need for heavy artillery support on all offensive operations. This was in part because of the overwhelming material and industrial advantage held by the Allies, as historian Niall Ferguson has pointed out that the combined Allied GDP was three times that of the Axis powers in 1943, and that the gap continued to widen during the war.¹⁴ The Allies could certainly manufacture many times what munitions and weaponry the Germans could produce, and pressed this advantage on the battlefield. A common

¹⁴ Niall Ferguson, *The War of the World: Twentieth-Century Conflict and the Descent of the West*, (New York: The Penguin Press, 2006), 515.

perception from the German side was that the Allies were fighting *materialschlacht*, a “material battle.” Where the German army's policy was “Sweat Saves Blood” and placed a heavy emphasis on training soldiers, the Allied approach was that “Equipment Saves Men,” and that munitions and firepower could be expended instead of lives.¹⁵ Indeed, as Ferguson points out, the Allies (and the Americans in particular) “were the masters of overkill, whose first principle was: 'always have on hand more of everything than you can ever conceivably need.'”¹⁶ Playing to this strength was a strategic decision for the Allied powers, given that by 1944 two of the principal Allies fighting in Europe, Great Britain and Canada, were facing critical manpower shortages. Munitions and guns could be replaced swiftly and relatively easily; the same could not be said about soldiers.¹⁷

This principle of superior material warfare was expressed most obviously in the western Allies' considerable advantage in artillery fire. For the Germans, the ferocity of the British, American, and Canadian artillery fire was something altogether new, even for veterans of the Eastern Front. Fighting in Normandy, the soldiers of the 2nd Panzer Division, despite having previously served in the Soviet Union, described the Allied barrages as being able to “trample the nerves” of seasoned veterans, and as “literally soul-destroying” to inexperienced men.¹⁸ The weight of Allied artillery was both punishing and ubiquitous along the front lines. As Canadian Brigadier Stanley Todd put it during Operation SWITCHBACK against the Leopold Canal in October 1944, one of the goals was for infantry to be given “fire when they want it for as long as they want it.”¹⁹

The Canadian officers who participated in the Battle Experience Questionnaires

15 Stephen G. Fritz, *Frontsoldaten: The German Soldier in World War II*, (Lexington: The University Press of Kentucky, 1995), 61.

16 Ferguson, *War of the World*, 520.

17 English, *Canadian Army in Normandy*, 174-175.

18 Fritz, *Frontsoldaten*, 62-63.

19 Quoted in: Copp, *Cinderella Army*, 92.

surveys reported similar experiences with artillery. Some 80 percent of the officers reported that they and their troops had carried out attacks under a creeping artillery barrage, although when broken down by theater of operations officers fighting in Italy were somewhat more likely to indicate that they had attacked under a barrage (86 percent) than those fighting in Northwest Europe (78 percent).²⁰ Artillery was the standard accompaniment for an infantry attack in either campaign, and the “creeping barrage” tactic of infantry advancing behind a “curtain” of falling shells to suppress enemy fire was a normal operating procedure, despite having originated in the First World War.²¹ Many officers commented on the application of this technique, though not all were favourably inclined towards it. Captain Donald Findlay, who served with both the Canadian Queen's York Rangers and the British 1/6 Queen's Royal Regiment, briefly talked about advances supported by creeping barrages that could reliably advance over a mile per attack.²² Likewise, Captain S.R. Lambert of the South Saskatchewan Regiment reported at least one instance, a night attack on the village of Rocquancourt during Operation GOODWOOD outside of Caen, where they achieved “success due to accurate [artillery] support and confidence in same” with a timed creeping barrage.²³ Major J.G. Stothart of the Stormont, Dundas, and Glengarry Highlanders was another major proponent of the creeping barrage, and claimed that:

20 Statistics compiled based on answers to survey “H” question 12(a), “Did your unit carry out an attack under an artillery barrage?” Overall: “Yes” 116 surveys, “No” 19 surveys, “Unknown” 5, “No Answer” 4. The difference between the Italian and NW Europe campaigns can possibly be accounted for by the broken terrain of the Italian peninsula, which limited the use of armoured vehicles and maximized the responsibility of infantry.

21 For a good discussion, see: Hew Strachan, *The First World War*, (New York: Viking, 2003), 168, 313-315.

22 Battle Experience Questionnaire, Captain Donald Findlay, LAC RG 24, Vol. 10450, 15.

23 Battle Experience Questionnaire, Captain S.R. Lambert, LAC RG 24, Vol. 10450, 182.

It is my firm opinion that if the Army can register and even in some cases when they cannot the closer the inf[antry] can get to a...barrage the better the final result. The casualties they may suffer are not in proportion with those they may incur through hesitation or a lack of speed in reaching the objective. We have had several experiences which substantiate this opinion...and I know from discussing it with [the troops] that they do appreciate the advantage of being close to a barrage.²⁴

On the other hand, Major John Irvin Mills, a company commander in the Queen's Own Rifles of Canada, mentioned in his notes that if the infantry failed to keep up with the pace of the barrage, roughly 100 yards every four minutes, they were held up in the open without support.²⁵ Failure to keep up with the creeping barrage's timed program was a significant problem during the war, if not the norm. Fully one-third of officers serving in Italy and just over 20 percent in Northwest Europe reported problems with their troops keeping up with the creeping barrage.²⁶ Troops who became bogged down in the terrain or pinned down by snipers and failed to keep up with the artillery barrage were a constant danger, noted Captain G.C. Watt of the Royal Winnipeg Rifles, and therefore, "the infantry must follow close in behind their artillery and not bog down and allow [the artillery] to do [the infantry's] job."²⁷

One feature of the Canadian experience with artillery that featured prominently in the Battle Experience Questionnaires was the heavy favouring of set-piece engagements and artillery "programs" timed to the minute for creeping barrages and concentrations upon enemy positions. This had advantages and disadvantages and received "mixed reviews" from the officers who participated in such battles. Many officers seemed to

24 Battle Experience Questionnaire, Major J.G. Stothart, LAC RG 24, Vol. 10450, 205.

25 Battle Experience Questionnaire, A/Major John Irvin Mills, LAC RG 24, Vol. 10450, 36.

26 Statistics compiled based on answers to survey "H" question 12(c): "Did [troops] keep up with the barrage effectively?" Overall: "Yes" 87 surveys; "No" 21 surveys; "No Answer" 8 surveys.

27 Battle Experience Questionnaire, A/Captain G.C. Watt, LAC RG 24, Vol. 10450, 173.

appreciate the predictability and consistency of the artillery support, and one of them, Captain James Bulloch of the Royal Winnipeg Rifles, specifically noted that a lack of timed artillery support during the crossing of the Leopold Canal in October 1944 brought out “the most mental fatigue cases I have ever seen.”²⁸ Some soldiers apparently used the predictability of the barrage to orient themselves and maintain proper direction at night during the attack.²⁹ There seemed to be at least a tentative consensus among officers that preparation and planning for set-piece attacks would lead to success, or at least reduced casualties. Captain Warren Harvey, a mortar officer with the North Shore Regiment, stated that he believed in success “due to thorough preparation...without these thorough preparations I feel that while the final result might have been the same, there would have been considerable confusion and higher casualties.”³⁰ At the same time, though, the heavy reliance upon timed programs and set-piece attacks also reflects some of the inherent inflexibility of Allied doctrine and planning. As British historian Timothy Place has found, the British and Canadian armies excelled at planning for foreseeable eventualities, and banked on being able to win battles through planning and preparation. It was the unforeseeable and unpredictable circumstances that created problems, and as Place says, “Failure to prepare all ranks to function effectively when events defied the plan was the greatest flaw in the British Army's training programmes.”³¹ Indeed, in the Battle Experience Questionnaires some officers complained bitterly about how when small but unexpected enemy positions were encountered it could bog down an entire force and defeat the attack.³² Others, including Captain L. Leclerc, a company second-in-

28 Battle Experience Questionnaire, Captain James Bulloch, LAC RG 24, Vol. 10450, 283.

29 Battle Experience Questionnaire, Major John Campbell, LAC RG 24, Vol. 10450, 75.

30 Battle Experience Questionnaire, Captain Warren G. Harvey, LAC RG 24, Vol. 10450, 180.

31 Timothy Harrison Place, *Military Training in the British Army: 1940-1944, From Dunkirk to D-Day*, (London: Frank Cass, 2000), 173-174.

32 Battle Experience Questionnaire, A/Major D.M. Ripley, LAC RG 24, Vol. 10450, 83.

command in Le Régiment de Châteauguay, therefore gave detailed descriptions and plans for how to make artillery fire plans more flexible and adjustable in the field.³³ Reading the questionnaires provides one with a picture of a highly centralized command that adopted elaborate fire plans in order to substitute shells for men's lives. However, as Terry Copp has pointed out, those shells had to fall in the right place in order for this strategy to be effective.³⁴

It is also clear that somewhere along the training line there were administrative difficulties, however, because despite the large numbers of infantry soldiers who took part in attacks supported by artillery, the number who were explicitly trained to do so was much smaller. Results from the surveys indicate that overall, according to the officers, just under half of all combat soldiers had received preliminary training in working under artillery barrages.³⁵ This number did not vary significantly based on which theater of operations the officer was engaged in, though the longer an officer was in combat the more likely he was to report that his troops had not received any such preliminary training, perhaps reflecting how ill-trained Canadian reinforcements tended to be.³⁶

While artillery may well have been a ubiquitous element of Allied doctrine, it had serious drawbacks and limitations that also need to be discussed in the context of the infantry. While the Allied barrages may have seemed “soul-shattering” to the Germans, it is possible that they were more spiritually than physically effective.³⁷ One aspect of the

33 Battle Experience Questionnaire, Captain L. Leclerc, LAC RG 24, Vol. 10450, 229.

34 Terry Copp, *Fields of Fire: The Canadians in Normandy* (Toronto: University of Toronto Press, 2003), 21.

35 Statistics compiled based on answers to survey “H” question 12(b): “did [troops] have preliminary training [in attacking under a barrage]?” Overall: “Yes” 58 surveys; “No” 54 surveys; “Unknown” 1 survey; “No Answer” 4 surveys.

36 Statistics again based on answers to survey “H” question 12(b), compiled according to the number of months an officer had served in the theater of operations.

37 While this seems to have been true of heavier battery-based artillery, the use of mortars...

Second World War that has come to historiographical light recently is just how ineffective the furious Allied artillery barrages could be. Terry Copp was among the first to seriously explore this issue from the Canadian perspective. His examination of documents from the Operational Research Section of the 21st Army Group (which included the Canadian Army in Northwest Europe) turned up studies demonstrating that, from D-Day onwards in that campaign, fire support was only marginally effective.³⁸ Operational Research scientists discovered that the “50 percent zone” – the area in which half the shells fired could be expected to land – was far larger than had been projected, and “only 5 percent of rounds fired by prediction [indirect, non-line-of-sight fire] could be expected to fall in an area 100 yards by 100 yards.” The mean point of impact for shells was extremely wide for line and over or under for range, with the result that not even the heaviest artillery barrages could reliably concentrate that heavy fire upon a designated area.³⁹ On the ground this meant that while artillery barrages were loud, explosive, disruptive, and potentially very lethal, an inability to put down accurate fire meant their fire potential was distributed and therefore dissipated over a much larger area than was actually being targeted. As in the First World War, when the same phenomenon had been discovered, even heavy concentrations of artillery fired by prediction could not be counted on to kill enemy soldiers, nor to obliterate their fixed positions.⁴⁰ Only directly observed artillery fire could be counted on to be particularly effective, with the guns either acquiring targets that they could see, which was hazardous, or with forward observers selecting targets. Imperfect communication with observers, however, made

38 Copp, *Fields of Fire*, 43, 124-125.

39 Ibid., 125-126. Copp's research indicates that this was true at least through the Battle of Normandy, and by implication in Italy as well up to that point, though through the rest of 1944 and 1945 the Operational Research Section assisted in developing ways to improve the artillery's accuracy.

40 Niall Ferguson, *The Pity of War*, (London: Basic Books, 1998), 307-308.

artillery spotting sufficiently hazardous and sporadic that the wildly inaccurate and rigid pre-planned barrages were still favoured.⁴¹

Not surprisingly, this shortcoming on the part of the artillery was a recurring theme in the notes of Canadian officers from all fronts during the war, paralleling the ubiquity of artillery support. “Timed [artillery] barrages were not very effective,” wrote Major J.W. Ostiguy, company commander in Le Régiment de Maisonneuve, “as the nature of German defensive emplacements in some sectors were so strong that they were not harmed by [artillery] and could not be bypassed.”⁴² Often Canadian troops would approach a German position that had been targeted by a heavy barrage, only to be caught off-guard, sustaining heavy casualties when they found the position still fully manned and defended despite the concentrated fire.⁴³ Lieutenant-Colonel T.P. Gilday, a battalion commander in Italy, perhaps summed this up best, and claimed that, “Artillery only keeps enemy heads down and does not kill. The heads are always up and guns firing when the infantry closes.”⁴⁴ While at least one officer rightly observed that the Germans feared the Allied artillery,⁴⁵ equally relevant were comments that while the artillery support was very good, any dug-in German position was relatively safe from the worst of its effects. Captain D.A.J. Paré, again of Le Régiment de Châteauguay, told in his notes of how, “Jerry was well dug-in on high ground, and he didn't bother much with [Canadian artillery].”⁴⁶ Fire plans, even the heaviest, could not be counted on to obliterate the

41 For some critiques of wireless communications in particular, see: Battle Experience Questionnaires, Captain Reginald Harvey Smith, LAC RG 24, Vol. 10450, 146; Major J.W. Ostiguy, LAC RG 24, Vol. 10450, 192. Fully half of the questions (nos. 16 through 30) on survey “H” of the questionnaires ask questions about the effectiveness of communications and signaling in battle, so it was clearly an area that the surveyors felt there was room for improvement to be made in.

42 Battle Experience Questionnaire, Major J.W. Ostiguy, LAC RG 24, Vol. 10450, 192.

43 Battle Experience Questionnaire, A/Major D.M. Ripley, LAC RG 24, Vol. 10450, 83.

44 Battle Experience Questionnaire, Lt.-Colonel T.P. Gilday, LAC RG 24, Vol. 10450, 54.

45 Battle Experience Questionnaire, A/Captain Skinkewicz, LAC RG 24, Vol. 10450, 48.

46 Battle Experience Questionnaire, Captain D.A.J. Paré, LAC RG 24, Vol. 10450, 246.

enemy on their own. While the artillery branch undeniably inflicted casualties upon the enemy, the high degree of inaccuracy meant that the key positions being targeted would seldom be destroyed, particularly if the troops were well dug-in. At best artillery made the enemy keep their heads down, producing more of a “neutralizing” effect than an explicitly “destructive” one.

Examining these shortcomings, however, demonstrates the true role of artillery in the combined-arms team, and also explains why so many Canadian officers discussed artillery barrages and fire plans in such agreeable terms. The artillery was useful for the infantry not in terms of its raw destructive power – which is never mentioned in the surveys – but as a way of keeping the enemy fire suppressed and with their heads down so that the Canadian infantry could advance to their objectives. The fear that the guns inspired in the Germans, coupled with the need to huddle in trenches or bunkers to avoid the worst of the barrage, made artillery the perfect weapon to “shepherd” infantry through a normally fire-swept zone to close with the enemy. This was why so many officers indicated the importance of the creeping barrage; “hugging” the edge of a rolling artillery bombardment as closely as possible minimized the time between when the barrage lifted and when the infantry were on top of their objectives. As Major Daniel Tremblay pointed out, “If you come in just after the barrage, it is much easier [to take an objective], but not always possible.”⁴⁷ Artillery was not a certain method of moving forward by any means, and German troops that braved the barrage and kept their “heads up” throughout were likely to catch Canadian troops rushing forward in the open. But with the weight of the Allied material advantage keeping the guns well-supplied, artillery fire could prove effective in escorting infantry in close, suppressing enemy fire if not destroying it

47 Battle Experience Questionnaire, A/Major Daniel Tremblay, LAC RG 24, Vol. 10450, 243.

outright, and thereby providing cover for the movement of infantry behind the barrage. A great majority of officers, particularly in Northwest Europe, reported that their troops could keep up effectively with the barrage even when they had not received preliminary training, which is a testament to how well Canadians typically performed under this system.⁴⁸ Furthermore, if there was not an observable learning curve over the course of the war, there was at least a steady effort to improve the accuracy of artillery on the part of the Canadian army.

Relating the ineffectiveness of artillery back to S.L.A. Marshall, the discussions of artillery in the Battle Experience Questionnaires reveals that while indirect fire support played an important role on the battlefield, it was never going to be a decisive weapon, given its inherent inaccuracy. The point of amassing such a preponderance of artillery on the battlefield was not to use it to obliterate the enemy, which was rarely possible, but to essentially “escort” the infantry in close enough to an objective to avoid the brunt of enemy fire. When it came down to the final advance on a position, infantry would be expected – and, indeed, would have to – use their small arms to engage and kill the enemy in a fight for the position. And they would certainly be required to engage the practically inevitable German counter-attack the same way. So despite the reputation that the Allied armies might have had for using artillery as a “crutch,” the fact is that artillery was hardly the senior partner in the combined-arms team. The massive barrages characteristic of Allied doctrine, particularly in Northwest Europe, often left the bulk of German defenders still alive and the core of the defence intact.⁴⁹ The skillful application of infantry small-arms fire was still needed to take and hold an objective, no matter the

48 Based on compiled answers to survey “H” questions 12(a), 12(b), 12(c).

49 David J. Bercuson, *Maple Leaf Against the Axis: Canada's Second World War*, (Toronto: Stoddart, 2002), 220.

power of the barrage that may have preceded it.

Tank Support: The Use of Armour

The Canadian experience with tanks during the Second World War was no doubt something of a disappointment after the huge success of armoured warfare by the Germans early on in the conflict. The only real all-armoured spearhead operation that the Canadians took part in was Operation GOODWOOD on 18-20 July 1944, which bought the British and Canadians some ground in Normandy at a heavy price, but failed largely due to a lack of infantry support.⁵⁰ GOODWOOD again demonstrated the potential vulnerabilities of armour, not just to other tanks and artillery but to dug-in infantry, minefields, and anti-tank weapons, proving the ineffectiveness of the “cavalry dash” doctrine of thinkers like Liddell Hart and Fuller.⁵¹ The failed operation was further affirmation of the lessons learned in North Africa, where the British Royal Armoured Corps had determined that tanks, “no less than others, should not be sent into the Unknown” without proper support.⁵²

There can be no denying the importance of tanks, as the introduction of armoured and other mechanized vehicles changed the face and the pace of warfare. Tanks could provide valuable, highly accurate direct-fire support to a battle, and had a sometimes-overlooked role in carrying infantry sections into battle. They were also great morale boosters for the infantry: generally the presence of heavy armour on a battlefield was very encouraging for the foot soldiers operating alongside them.⁵³ But at the same time,

50 See: English, *Canadian Army and Normandy*, 222; Copp, *Fields of Fire*, 133-154.

51 John Keegan, *Six Armies in Normandy: From D-Day to the Liberation of Paris, June 6th – August 25th, 1944*, (New York: The Viking Press, 1982), 193-194.

52 Minutes of a conference held by General Montgomery HQ 21 Army Group, 13 January 1944; quoted in: English, *Canadian Army and Normandy*, 166-168.

53 Battle Experience Questionnaires, A/Major T.M. Lowe, LAC RG 24, Vol. 10450, 129; Lt.-Colonel E.T. Jacques, LAC RG 24, Vol. 10450, 186.

tanks could also be a considerable source of frustration, nuisance, and even danger for soldiers, and, at least in the Canadian experience, were rarely the instruments of decision by themselves. Their primary role became one of supporting the infantry “sledgehammer,” (as Canadian Lieutenant-General Guy Simmonds termed it) as tanks and armoured divisions in general did not have the staying power to overcome organized German defences by themselves.⁵⁴

One of the central problems with the tanks employed by the Canadian Army was their vulnerability, in absolute terms as well as in comparison with German tanks. Historians have been demonstrating for decades now that Allied armour, while plentiful and mechanically reliable, was tactically disadvantaged for the roles originally envisaged for it. The American-made M4 Sherman tank, the mainstay armoured vehicle for the Canadians, was regarded by historian Desmond Morton as extremely “vulnerable and under-gunned,” an embodiment of the Allies' inferior equipment.⁵⁵ The Sherman tended to catch fire easily and burn fiercely due to its petrol, rather than diesel, engine. Its armour was also relatively light, and while this made it faster than German tanks it was an easy target for enemy tank and anti-tank fire.⁵⁶ These vulnerabilities were exacerbated by the fact that, as Canadian Major R.A. Cottrill of the Queen's Own Rifles reflected, the Sherman's silhouette was too high and its profile too large, making it easier to spot them in the field.⁵⁷ As C.P. Stacey also pointed out shortly after the end of the war, the relative narrowness of the tracks of Shermans when compared to those of Panther and Tiger tanks put them at a mobility disadvantage as well, particularly in rugged terrain such as exists

54 English, *Canadian Army and Normandy*, 240; Copp, *Fields of Fire*, 106, 260.

55 Desmond Morton, *A Military History of Canada: From Champlain to the Gulf War*, (Toronto: McClelland Stewart, 1992), 216.

56 Keegan, *Six Armies in Normandy*, 197-198.

57 Battle Experience Questionnaire, Major R.A. Cottrill, LAC RG 24, Vol. 10450, 177.

in Italy.⁵⁸ At the same time, the standard Sherman 75mm gun could not penetrate the frontal armour of a German Panther tank, and could only hope to damage a Mk VI Tiger tank from the rear or point-blank from enfilade positions, which Shermans could have a difficult time reaching given the tank's other weaknesses.⁵⁹ While a modified version of the Sherman called the "Firefly" mounted a superior 17-pounder gun that could take on heavy German armour, the Firefly was only issued on a very limited scale and naturally became a prime enemy target. British and Canadian armoured regiments eventually managed to deploy two per tank troop, but the Americans never had enough to make any serious difference.⁶⁰ Even Terry Copp, a vociferous advocate of the Canadian Army's performance in the Second World War, had to admit that, "Neither Shermans nor Cromwells and Churchills [British tanks] could lead an advance against even hastily constructed German defences without supplementary suppressive fire."⁶¹

Notably, the firepower of other tanks had less effect on armour than might be imagined. Despite visions of massive pitched tank battles, the guns on most models of tanks tended to be relatively feeble. The Germans certainly preferred to destroy Allied tanks not with their own tanks, but with antitank guns, particularly the 88mm guns but also with infantry-equipped *Panzerschrek* (literally the "tank-terrorizer," a shoulder-mounted infantry anti-tank weapon).⁶² The same held true in the Canadian experience. The British-made Projector, Infantry, Anti-Tank (PIAT) weapon used by Canadian infantry was appreciated by officers in the Battle Experience Questionnaires as a tremendously effective weapon against German armour. Firing a high-explosive anti-

58 C.P. Stacey, *The Canadian Army, 1939-1945: An Official Historical Summary*, (Ottawa: King's Printer, 1948), 151.

59 English, *Canadian Army and Normandy*, 207.

60 Bercuson, *Maple Leaf Against the Axis*, 219.

61 Copp, *Fields of Fire*, 129.

62 English, *Canadian Army and Normandy*, 164.

tank round, it could penetrate tank armour at close ranges and could be used against infantry slit trenches or fortifications.⁶³ When surveyed as to which infantry weapons had been found to be particularly effective in combat, more officers chose the PIAT than any other weapon, with the Bren light machine gun coming up a distant second.⁶⁴ The PIAT's generally outstanding effectiveness during Canadian combat operations is indicative of the threat posed to armour by well-equipped infantry and illustrates how the "armoured spearhead" concept of tank warfare became impracticable against strong infantry positions.

Data from the Battle Experience Questionnaires also strongly corroborates historians' accounts of the weaknesses – actual and perceived – of Canadian armour during the war. Based on the surveys, it seems that most Canadian infantry co-operated with tanks on a regular basis: 80 percent of officers serving in Northwest Europe and 77 percent serving in Italy reported having carried out combined arms operations with tanks.⁶⁵ But if tanks were ubiquitous on the Canadian battlefields, so were the problems encountered in co-operating with them. In their personal notes, many officers expressed disappointment or frustration with the vulnerability of the Shermans that they operated with. Major John Clarke, with the 48th Highlanders in Sicily and Italy, told of how during the assault on the Hitler Line 52 out of 54 tanks were lost in less than half an hour due to minefields and concealed German 88mm anti-tank gun turrets.⁶⁶ Similarly, Captain

63 Battle Experience Questionnaire, Captain H.S. Lamb, LAC RG 24, Vol. 10450, 159.

64 Statistics compiled based on answers to survey "H" question 2: "Have you found any of these weapons outstandingly effective? If so, which and why?" The top weapons mentioned by the officers are as follows: PIAT (74 mentions), Bren gun (54 mentions), 3-inch mortar (44 mentions), No. 36 grenade (33), No. 77 grenade (24), Rifles (15). In contrast, the following question, survey "H" question 3, is: "Have you found any of these weapons ineffective? If so, which and why?" The PIAT received only three mentions as an *ineffective* weapon.

65 Statistics compiled based on answers to survey "H" question 15(a): "Have you ever co-operated with Infantry Tanks?" Overall results: "Yes" 114 surveys; "No" 26 surveys; "No Answer" 4 surveys.

66 Battle Experience Questionnaire, Major John C. Clarke, LAC RG 24, Vol. 10450, 178.

William Bennett of the First Special Service Force (FSSF) described an incident at Anzio beach where: “At one point I saw six of our [Sherman] tanks (American 1st Arm.) knocked out by what appeared to be one Tiger firing 6 consecutive shots...a great many men of 1st Reg[iment] FSSF were literally overrun by German tanks while they tried to hold their objective.”⁶⁷ Some were appreciative of the root of the problems, such as Major Daniel Tremblay, who said that, “We had Sherman tanks, and they are very good as far as speed is concerned, but too high + not enough armour. I know if you want speed, you have to eliminate armour.”⁶⁸ This idea, that Allied tanks were “frail” and could not match German tanks in battle, is repeated with some frequency by the officers filling out the surveys.⁶⁹ And as Lieutenant-Colonel T.P. Gilday put it, if the infantry was well-trained and knew the ground, it was always better for them to attack by night *without* tanks than by day *with* tanks.⁷⁰

Moreover, while tanks could provide a significant boost to infantry morale, this was contingent upon their actions. Lieutenant-Colonel E.T. Jacques of Le Régiment de Maisonneuve commented on how, “The infantry were always very enthusiastic and morale high when it was known that tanks were co-operating. However, after a couple of shows the men and officers were not so happy as they found that the tanks expected the infantry to lead.”⁷¹ It was an established element of combined arms tactical doctrine by 1943 that tanks should be supporting infantry from behind rather than leading the way themselves, as tank fire from protected positions to the rear of an infantry advance was thought to be more effective than their physical presence up front, which exposed the

67 Battle Experience Questionnaire, Captain William R. Bennett, LAC RG 24, Vol. 10450, 208.

68 Battle Experience Questionnaire, A/Major Daniel Tremblay, LAC RG 24, Vol. 10450, 243.

69 Battle Experience Questionnaires, Captain Mark Tennant, LAC RG 24, Vol. 10450, 209; Major David Durward, LAC RG 24, Vol. 10450, 115.

70 Battle Experience Questionnaire, Lt.-Colonel T.P. Gilday, LAC RG 24, Vol. 10450, 54.

71 Battle Experience Questionnaire, Lt.-Colonel E.T. Jacques, LAC RG 24, Vol. 10450, 186.

tanks to enemy fire.⁷² This was likely true, given the vulnerability of the tanks, but was something that the surveyed officers were acutely aware of and generally dissatisfied with. “Infantry [co-operation with] tanks,” wrote Major Ostiguy, “often took the shape of cover by the tanks guns from an area, the tanks moving up after success. This was bad for the morale of foot troops who often got out of touch with the tanks due to the nature of the ground and were pinned down by enemy fire which could have been dealt with by the tanks had they been closer.”⁷³ The vulnerability of the Sherman tanks to German weapons was recognized as the central reason for the perceived timidity of tanks, from an infantry perspective. In the words of Major John Wesley Burgess of the Essex Scottish Regiment:

My experiences with tanks cooperating with [infantry] were all unfortunate. Perhaps there was some reason but Canadian tanks attached to us always seemed singularly reluctant to engage enemy with fire or expose themselves to possible enemy fire, as a result they never rendered material help. This obtained...19-20 June [1944] at Verriers and in the night breakthrough near Rocquancourt, on which occasion the [Regiment] of tanks responsible for maintaining direction of embussed column moving at night in enemy territory, broke and disappeared when single 88mm gun opened fire. Infantry was left short of objective without tank support.⁷⁴

Along the same lines, Major Tremblay said of this phenomenon that, “we found out most of the time that [tanks] don't like to come ahead with us, and would prefer to shoot us in [support us] far behind when there are bunkers of 88mm [anti-tank guns], as they are very vulnerable to them.”⁷⁵ Captain Paré made similar note of this fact: “As far as tanks are concerned, they are as vulnerable by an 88[mm anti-tank gun] as a man is with a bullet,

72 English, *Canadian Army and Normandy*, 167.

73 Battle Experience Questionnaire, Major J.W. Ostiguy, LAC RG 24, Vol. 10450, 192.

74 Battle Experience Questionnaire, Major John Wesley Burgess, RG 24, Vol. 10450, 131.

75 Battle Experience Questionnaire, A/Major Daniel Tremblay, LAC RG 24, Vol. 10450, 243.

and did they know it! What they do is, take a turret-down or Hull-down posit[ion], and after firing and the infantry coming in they moved in too, but like infantry.”⁷⁶ Others expressed their frustration of this timidity as well. Major R.C. Graves of the North Nova Scotia Highlanders made a sour remark when discussing infantry weaponry about how, “I have never used a German 'Bazooka' but I know that our own tanks will NOT go forward until we can assure them that there are none in the area.”⁷⁷ According to the data compiled from the officers' survey answers, the experiences of these officers was not exceptional. In an assessment of all survey responses to a question regarding whether the infantry usually moved in front of, behind, or amongst the tanks in combined arms operations, 42 percent of officers reported operating exclusively in front of the tanks and only 12 percent exclusively behind the tanks, though 25 percent reported having moved in “all” positions relative to the tanks.⁷⁸ When examining the data according to theater of operations, officers in Northwest Europe were more likely to have operated “amongst” tanks and less likely to answer “all,” while officers in the Italian campaign were as likely to answer “all” as they were “in front,” but reported “behind” and “amongst” with less frequency.⁷⁹ So while there were some variations, according to the surveys, the experience of Canadian infantrymen in both Italy and in Northwest Europe indicate that it was usual for tanks to follow the infantry in the advance. And, as Major R.G. Liddell of the Royal Canadian Regiment pointed out in his addendum notes, this rearward

76 Battle Experience Questionnaire, Captain D.A.J. Paré, LAC RG 24, Vol. 10450, 246.

77 Battle Experience Questionnaire, Major R.C. Graves, LAC RG 24, Vol. 10450, 280.

78 Statistics compiled based on answers to survey “H” question 15(b): “Did you move in front of, behind, or amongst the tanks?” Overall results: “In Front” 49 surveys; “Behind” 14 surveys; “Amongst” 16 surveys; “All” 30 surveys; “No Answer” 9 surveys.

79 Statistics compiled based on answers to survey “H” question 15(b), differentiated based upon theater of operations. NW Europe results: “In Front” 34 surveys; “Behind” 10 surveys; “Amongst” 14 surveys; “All” 15 surveys; “No Answer” 6 surveys. Sicily & Italy results: “In Front” 15 surveys; “Behind” 4 surveys; “Amongst” 2 surveys; “All” 15 surveys; “No Answer” 3 surveys.

positioning of the tanks could be very destructive to infantry morale.⁸⁰

Understandably, the positioning of tanks was a source of dissatisfaction for infantry officers, and there was a tendency among those who completed the surveys to complain that the armoured tanks should be leading the “soft target” infantry, rather than the other way around. Major Jock McLeod of the Algonquin Regiment stated rather bluntly that, “the tanks should lead regardless of whether there is a bazooka or other anti-tank weapon around the corner. It is still better to lose equipment than men's lives.”⁸¹ Lieutenant-Colonel Jacques thought much the same thing, saying, “In discussing Infantry + tank cooperation at various times with Infantry Officers it seems to be the general consensus of opinion that tanks should lead,” though he also admits that, “Of course, this is merely the Infantry point of view.”⁸² In more colourful terms, Captain L.P. Beech mentioned that he and his infantry company would, “Prefer tanks in front, then I know where they are, in other words they haven't buggered up.”⁸³

Of course, some officers understood the tactical exigencies of tank use, and many found ways to make tank-infantry co-operation work with tanks being deployed following the infantry at a distance.⁸⁴ They clearly understood the problems presented by strong anti-tank defences. As Major Ostiguy said, “due to the great range at which enemy 88[mm guns] engaged our tanks it was seldom possible to neutralize them on time.”⁸⁵ Nonetheless, there seemed to be an understandable reluctance among the infantry officers to accept that armoured vehicles were somehow more vulnerable than

80 Battle Experience Questionnaire, Major R.G. Liddell, LAC RG 24, Vol. 10450, 281.

81 Battle Experience Questionnaire, A/Major Jock McLeod, LAC RG 24, Vol. 10450, 128.

82 Battle Experience Questionnaire, Lt.-Colonel E.T. Jacques, LAC RG 24, Vol. 10450, 186.

83 Battle Experience Questionnaire, Captain L.P. Beech, LAC RG 24, Vol. 10450, 256.

84 Battle Experience Questionnaires, Captain Edward Kenneth Maxted, LAC RG 24, Vol. 10450, 295; Captain Mark Tennant, LAC RG 24, Vol. 10450, 209.

85 Battle Experience Questionnaire, Major Ostiguy, LAC RG 24, Vol. 10450, 192.

unarmoured infantry in the field. Perhaps Major Cottrill said it best when he wrote of how, in his experience, “Tank commanders rather slow in reacting to infantry's immediate needs. Appear to lose sight of fact that a good Rifle company commander won't risk losing [his men] any more than [the tank commander] will his own men.”⁸⁶

Furthermore, there were serious problems with coordinating combined movements and fire due to breakdowns in communications between infantry and tanks, which was one of the chief complaints of infantry officers. According to the surveys, wireless communication with tanks rarely functioned properly, and, owing to their limited field of vision, tank commanders rarely saw as much of the battlefield as the infantry.⁸⁷ In order to communicate properly with supporting tanks while in battle – to point out an enemy strong point or improvise plans – foot soldiers typically had to leave themselves exposed. This could mean communicating via the wired telephone box fitted on the backs of some, but not all, tanks,⁸⁸ but as Major Cottrill pointed out, more often it meant infantrymen had to, “Climb turret + endeavour to point out hold up [to the advance] (Not very healthy!).”⁸⁹ There were other more creative, if extremely inefficient, ways to communicate messages to tanks. Several officers claimed that they had used tracer fire, smoke, or flares to point out enemy positions to tanks.⁹⁰ Captain P.A.R.

Blaker of the Argyll and Sutherland Highlanders Regiment noted, perhaps wryly, that his “most satisfactory method” of attracting the attention of a tank commander was to “throw

⁸⁶ Battle Experience Questionnaire, Major R.A. Cottrill, LAC RG 24, Vol. 10450, 177.

⁸⁷ For an example, see: Battle Experience Questionnaire, Captain Reginald Harvey Smith, LAC RG 24, Vol. 10450, 146.

⁸⁸ Major A.L. Saunders reports that even when they were equipped, these telephones were often “switched off, or out of order, or the tank crew Comd being busy looking out for himself listening to his Signals Comd would not take time to listen,” and that they were therefore not reliable in facilitating tank-infantry communications. Battle Experience Questionnaire, Major A.L. Saunders, LAC RG 24, Vol. 10450, 235.

⁸⁹ Battle Experience Questionnaire, Major R.A. Cottrill, LAC RG 24, Vol. 10450, 177.

⁹⁰ Battle Experience Questionnaires, Major A.L. Saunders, LAC RG 24, Vol. 10450, 235; Major J.C. Allan, LAC RG 24, Vol. 10450, 67; Captain T.H. Burdett, LAC RG 24, Vol. 10450, 78.

a handful of earth at him.”⁹¹ Major John Clarke also recommended throwing “rocks and sand” at friendly tanks to attract their attention and avoid having infantry officers expose themselves, though less amusingly he also said that at Ortona they had to use bursts of Bren or sub-machine gun fire on the rear of the tank turret for the same purpose.⁹² The communication problem became acute when friendly tanks were unable to distinguish friend from foe in the confusion. More than one surveyed officer complained bitterly about “trigger-happy tanks” or “indiscriminate fire.”⁹³ At best this halted infantry progress, and at worst began to inflict friendly fire casualties, which were listed in the surveys as being among the most prominent causes of low morale among Canadians.⁹⁴ The restricted vision of the tanks meant that it was usually up to the infantry to, “look out that tanks did not cause accidents either to personnel or vehicles.”⁹⁵ This was undoubtedly another reason why some infantry officers preferred to work behind tanks, rather than in front of them. An inability to communicate could, therefore, cripple attempts at co-operation between the two fighting arms, and one can appreciate why, at times, infantry officers viewed tanks as a liability and disliked working with them.

Still, despite considerable problems there is no lack of evidence that infantrymen generally enjoyed having tanks present for fire-support. They were particularly helpful in blunting the inevitable German counter-attacks, as they could bring accurate and powerful direct fire to supplement artillery barrages and infantry small arms.⁹⁶ Tanks could move up to support a position quickly, and the closest co-operation with them was

91 Battle Experience Questionnaire, A/Captain P.A.R. Blaker, LAC RG 24, Vol. 10450, 125.

92 Battle Experience Questionnaire, Major John C. Clarke, LAC RG 24, Vol. 10450, 178.

93 Battle Experience Questionnaires, Captain Pollin, LAC RG 24, Vol. 10450, 120; Major John C. Clarke, LAC RG 24, Vol. 10450, 178.

94 See: survey “A” question 4: “Please list in order of importance factors which, in your unit, appeared to have the effect of lowering morale.”

95 Battle Experience Questionnaire, Captain G.A. Marron, LAC RG 24, Vol. 10450, 89.

96 Battle Experience Questionnaire, A/Major Elbert Louis Froggett, LAC RG 24, Vol. 10450, 130.

almost universally considered desirable.⁹⁷ Major L.P. Coderre of the South Saskatchewan Regiment made special note of how:

In an advance-to-contact role we have used tanks behind the leading company. Their role there is to shoot-in the company. The method used in this case is that once the leading elements are fired on or brought to ground the tanks, from a position of about 500 yards to the rear of a company, and to either flank, will neutralize most any enemy strongpoint, thereby allowing the infantry to regain the fire initiative.⁹⁸

It is unfortunate, then, that so many problems plagued this aspect of the combined arms team. In the survey notes there are more expressions of dissatisfaction with infantry-tank co-operation (which was a topic the questionnaire specifically asked officers to write about) than there are mentions of successful operations between the two. While this should not be taken as a statistical observation, the general impression from the Battle Experience Questionnaires is that infantry co-operation with tanks could be effective at the best of times, but was often extremely problematic in practice. Spotty field communications exacerbated the difficulties presented by the tanks' inherent tactical vulnerabilities and predilection for letting the infantry fight forward ahead of them. Whatever the case, the idea of *blitzkrieg* warfare, with the armour leading the way forward towards a breakthrough, was largely foreign to the Canadian battlefield experience. For all of its mechanized power, the Canadian army still required the infantry to act as its “sledgehammer” both in the attack and on the defence.

97 Battle Experience Questionnaire, A/Captain J.A.D. Graham, LAC RG 24, Vol. 10450, 34.

98 Battle Experience Questionnaire, Major L.P. Coderre, LAC RG 24, Vol., 10450, 143.

Conclusions

In the closing chapter of *The Face of Battle*, military historian John Keegan explored the idea that through the ages the common denominator in warfare has been the central role of the “common” infantryman. Despite the march of science and technology, this was no less true for the Second World War. As Keegan explains:

A Second World War armoured division in action...little resembled the fast-moving fleet of land ironclads, wheeling and shooting in unison, of which the visionaries of *blitzkrieg* had dreamed...their operations, losing the simplicity of ship-to-ship actions, became heavily intermingled with confused infantry combats of a kind little different from those which soldiers of the First World War had experienced in many of the great offensives.⁹⁹

The combat arms that embraced mechanization – the artillery, the tanks, the air force – have become the popular icons of the Second World War. But while there can be no denying their role and their importance in the fighting, their central role in the fiercest ground fighting of the war has perhaps been overstated. At its core, the Second World War on virtually every front was as savage an infantry “slugging contest” as the First World War. The infantry of all armies sustained by far the highest casualty rates, which was particularly disastrous for nations such as Canada, which concentrated such a low percentage of servicemen in the infantry.¹⁰⁰ Infantry casualty rates in several of the major battles of the Second World War were higher than any of the Western Front battles of the Great War.¹⁰¹ While armour and increased firepower contributed to the war's greater mobility (at least in Northwest Europe) and generally drove up the casualty rates, the evidence from the primary sources and from other historians tells us that it was the role

⁹⁹ Keegan, *The Face of Battle*, 287-288.

¹⁰⁰ For a good discussion of the manpower crisis, see: Bercuson, *Maple Leaf Against the Axis*, 240; English, *On Infantry*, 138.

¹⁰¹ English, *On Infantry*, 274.

of infantry that remained pivotal in battle.

Artillery was simply not as accurate or effective as it would have needed to be in order to act as a “crutch” for foot soldiers. While it could prove devastating and demoralizing for the enemy, and could certainly neutralize positions temporarily, even the overwhelming advantage in munitions and manufacturing capacity enjoyed by the Allies was insufficient to singularly obliterate German defenders. Its role – as it was during the First World War – was to *suppress* enemy fire rather than to destroy it, and to “escort” infantry in close enough to make good use of their own fire. It was also used to very good effect in blunting German counter-attacks against seized positions, when enemy troops were in the open and more exposed, but even then it was Canadian infantry that was needed to hold the position.¹⁰²

Likewise, while the tank remains an iconic weapon of the war, its decisive impact in the years after 1941, the entire combat experience of the Canadian army, was limited by the machine's inherent vulnerabilities and, notably, by the power of infantry. Anti-tank weaponry available to the infantry both in the form of larger guns and in hand-portable devices was simply too great for tanks to operate in a decisive fashion. The German *Panzerschreck* anti-tank rocket launcher, for example, could penetrate over 200mm of tank armour, such as that found on the Soviet IS-2, which was far more heavily-armoured than anything the western Allies had available. One shot was usually sufficient to destroy any Allied armoured vehicle.¹⁰³ It was little wonder, then, that tanks were typically used in supporting the infantry – usually from behind – rather than leading the charge.

¹⁰² Copp, *Fields of Fire*, 73.

¹⁰³ John Erickson, *The Road to Berlin: The continuing story of Stalin's war with Germany*, (Boulder, CO: Westview Press, 1983), 83.

The Battle Experience Questionnaires demonstrate that Canadian soldiers were keenly aware of the limitations of the supporting arms. While one would expect the reports of infantry officers to reflect the infantry experience, the surveys confirm what other historians have also established: that mechanized technology in the Second World War served to supplement the infantry, not to replace them or even seriously detract from their importance. Terry Copp has argued at length that Canadian infantry was the decisive arm and could operate effectively even without artillery or tank support. “Given a reasonable chance of success,” Copp tells us, “the Canadian soldier proved capable of overcoming even the most elaborate defensive positions.”¹⁰⁴ The armoured and artillery combat arms increased this “reasonable chance of success” considerably on almost any given operation during the war, but it was upon the infantry that the burden of most of the fighting and most of the dying fell.

It is important to keep this point in mind in examining S.L.A. Marshall's observations. Being wary of over-generalizing, we can at least say that in the case of Canadian ground combat during the Second World War, the infantry were the senior partners of the combined-arms team. However iconic mechanized firepower was, it was necessarily subordinated to the reality that war was still being fought and won primarily by infantry action, the “sledgehammer” of the attack when properly supported.¹⁰⁵ If Marshall was correct and his observations universally applicable, only 15 to 20 percent of combat infantrymen were doing so much as firing their weapons, and the “sledgehammer” had only a fraction of the weight that it was believed to have. Given how much emphasis had to be placed upon the infantry due to the relative ineffectiveness

¹⁰⁴ Copp, *Fields of Fire*, 106.

¹⁰⁵ Ibid., 27.

of artillery and the acute vulnerability of tanks, such a proposition becomes immediately suspect. Taking Marshall at his word would mean believing that infantry in battle were necessarily subordinated to the firepower of crew-served arms like the tanks and the artillery, given that infantry were unable to generate any themselves, what with the unfavourable “ratio of fire.” The weight of historical evidence indicates that this could not have been the case. While not constituting conclusive evidence, it nonetheless shows that Marshall, in *Men Against Fire*, has perhaps sold the infantry short of its true importance. It is difficult to believe that any infantry unit where scarcely one in five men, on average, would do so much as fire their weapons in the air would be able to constitute the kind of “sledgehammer” that was needed to win the war against Germany.

Chapter Five – The Infantry

While the combined arms “team” of the Canadian army was strong and effective in the Second World War, the evidence tells us that the mechanized arms all operated primarily in support of the infantry. It was undeniably the Canadian infantry foot soldier who carried the fight during the Italian campaign and in Northwest Europe. As it has now been established that infantry action was central to the conduct of the Second World War, this chapter will focus attention on the critical issue of infantry *effectiveness* during the war. “Combat effectiveness” can be a problematic term in and of itself, but can broadly be understood as an abstract measure of how well a group of soldiers carries out their assigned duties in combat, with a degree of aggressiveness and a desire to, as military analyst Sam Sarkesian put it, “impose their will” upon an enemy.¹ Combat effectiveness encompasses the attitudes and commitment of individual soldiers, the will to fight, and the discipline with which tasks are carried out. The true measure of combat effectiveness is the performance of a unit in actual combat.² We have already heard at length from Marshall and Grossman, who champion the idea that only 15 to 20 percent of the men in any given rifle company in the war would make any use of their weapons, indicating a remarkably endemic combat ineffectiveness among U.S. troops. An 80 to 85 percent non-firing rate among trained soldiers would speak poorly of their motivation and ability. That Marshall believed these numbers represented a universal truth of human combat, and not merely an isolated circumstance, would speak poorly for all soldiers during the Second World War, including the Canadians.

1 Sam C. Sarkesian, “Combat Effectiveness,” in *Combat Effectiveness: Cohesion, Stress, and the Volunteer Military*, Sam C. Sarkesian (Ed.), (Beverly Hills: Sage Publications, 1980), 9.

2 Ibid., 11.

Newly discovered data from the Battle Experience Questionnaires, however, contradicts many of Marshall's observations on the “ratio of fire,” as it might have applied to Canadian soldiers. Analysis of the survey results and the detailed notes left by the officers demonstrates several things to the historian. While there is ample evidence of widespread participation in small arms use by infantrymen, there is not a single mention in the surveys of anything that could be construed as a perceived crisis in the number of soldiers firing their weapons. The absence of Canadian fire is not reflected in any statistics compiled from questionnaire answers, nor is there any hint in the addenda that such a problem existed. The absence of evidence is not proof enough, of course, but the responses of officers surveyed for the Battle Experience Questionnaires also provide compelling evidence in direct contradiction of Marshall's work. Indeed, there is substantial proof that there was no absence of fire among Canadian soldiers. This chapter will address three of the major themes distilled from these reports, as they relate to Marshall's “ratio of fire.”

First there is the overwhelming impression from the surveys that a central problem of combat, far from being that troops were not firing their weapons, was that infantrymen were making *too much* use of their small arms in battle. Officers were sometimes alarmed by the widespread, wasteful and dangerous practice on the part of the troops of firing excessively without clear – or sometimes without *any* – targets. Excessive firing was portrayed as a negative phenomenon by many (though not all) officers, but it was also noted as being extremely widespread despite this. Fire-discipline, the ability of soldiers to hold their fire until ordered to engage, was highly prized, and was often identified as one of the qualitative edges held by German soldiers over Allied

troops: Canadian troops were more apt to fire wildly and to excess, while the German infantryman was perhaps better-trained in holding his fire and not giving away his position. The impulse of soldiers in combat to shoot their weapons too much, even if not to good effect, has been well-documented by historians and military analysts, including by Dave Grossman, Marshall's foremost advocate. While it is not an aspect of combat that is often discussed, nor is it fully understood, the tendency on the part of soldiers to fire too much rather than too little is supported by the questionnaires.

Second, the writers of the Battle Experience surveys went to considerable lengths to determine the officers' thoughts on the effectiveness – and ineffectiveness – of the weapons and small arms employed by Canadian soldiers in battle. Thanks to the surveys we have detailed information on what officers perceived to be the most used, the most effective, and the most ineffective weapons among the troops they commanded. The officers complained bitterly in their notes whenever they perceived there to be a problem with weapon effectiveness. There are also detailed numbers on what weapons the Germans used *against* them, and which had the greatest impact upon the morale of the Canadians.

Third, the issue of what *did* cause ineffectiveness in the Canadian army is addressed by the questionnaires and is worth examining as well. One of the central complaints of the officers being surveyed was the state of the reinforcements, soldiers sent to their units to replace men wounded, killed, or captured in battle. Reinforcements, particularly later in the war, tended to be extremely “green,” poorly-trained and often only partially effective as soldiers. While this was not uniformly true, the general ineffectiveness of many replacement soldiers was perceived as one of the central

problems of battle by Canadian officers. Their reports on the disappointing performance of these “green” troops indicates an attention to the details and performance of their men that S.L.A. Marshall fails to give officers credit for, but may also be the source of some of Marshall's misconceptions about the combat he claimed to observe.

The surveys give a very different impression of combat in the Second World War than Marshall's *Men Against Fire*. The questionnaires tell us that soldiers firing too much was a central problem, whereas lower volumes of controlled fire was often seen as an ideal. There is not the slightest mention or implication of any “crisis” in terms of men not firing their weapons. Weapons use and participation was typically seen as quite high and effective, and if there were notable problems with men not taking part in combat it was almost completely confined to combat replacement soldiers. This data suggests that Marshall's “ratio of fire” observations simply do not apply to the Canadian experience.

The Phenomenon of “Too Much Fire”

A significant refutation to S.L.A. Marshall's work already exists in that many military analysts and historians have noted that the tendency of trained soldiers in battle is to err on the side of firing their weapons too much, rather than too little. One of the best examples of this is provided by Ben Shalit, an Israeli military psychologist who observed combat during the Six-Day War, and author of the excellent book, *The Psychology of Conflict and Combat*. Shalit, discussing S.L.A. Marshall's work, is worth quoting on this point:

With Marshall's [ratio of fire] in mind, I have often sought to find corroboration for his finding that only 30 percent [*sic*] of the men fire at the enemy. Other reports from different wars give much higher figures, around 75-80 percent. My observation – carried out on ordinary infantry

units, as well as in select commando units – left me with the impression that nearly 100 percent fired, when told to do so or when circumstances demanded. In fact, my very strong impression (as well as my own experience) is that firing is a very effective method of relieving tension and fear, and is often engaged in even when there is no need for it.³

As Shalit goes on to say, “Some people do react to danger by freezing; but, if one does react at all, it seems to me that the tendency is to fire excessively, rather than not to fire.”

Shalit gives examples of his own experience with Israeli soldiers, which included producing volumes of fire that could only be described as “overkill,” but concludes that, “Like whistling and yelling in the dark, firing has a calming effect. The drumming and thudding of the weapon serves to cover up the throbbing fear within oneself. One often fires not so much to destroy and conquer...as to overcome and control one's own fear. Such firing is often ineffective, and it requires learning and example by a good leader to control.”⁴

Psychiatrist Theodore Nadelson also claims that firing a weapon, “excites, and can strangely soothe.” As Nadelson explores in his book, *Trained to Kill: Soldiers at War*, there is a power inherent in firing a weapon, an engaging in the destructive desire to unleash irresistible force. “The desire becomes an all-engrossing fact,” Nadelson says, “force is 'launched from the eyes' – the eye sees, the missile flies its trajectory, annihilates space, and the opponent who would kill you is dead...Killing a man who wants to kill you erases the primal fear of death. The repetitive exercise of such control and dominance over terror becomes addictive, and other experience pales.”⁵

Finally, Dave Grossman, Marshall's most vocal advocate and intellectual heir to

3 Ben Shalit, *The Psychology of Conflict and Combat*, (New York: Praeger, 1988), 141.

4 Ibid., 142. Also see: A.L. Glass, “The Problems of Stress in Combat Zones,” Symposium on Stress, (Washington, D.C.: Army Medical Service Graduate School, 1953).

5 Theodore Nadelson, *Trained to Kill: Soldiers at War*, (Baltimore and London: The Johns Hopkins University Press, 2005), 46.

the “ratio of fire” data, points out much in the same thing, in seeming contradiction of his otherwise unwavering belief in Marshall's numbers. In *On Killing*, Grossman discusses in some detail how firing a gun is helpful in meeting a number of human psychological urges, most notably the deep-seated desire to posture in the face of aggression. Although he argues rather ineffectively that all of this “posturing” fire was meant to scare and not to kill, Grossman nonetheless tells us that, “soldiers in battle have a desperate urge to fire their weapons even when (perhaps especially when) they cannot possibly do the enemy any harm.”⁶ Furthermore, he cites U.S. Civil War historian Paddy Griffith, who claims that:

Time and again we read of regiments [in the Civil War] blazing away uncontrollably, once started, and continuing until all ammunition was gone or all enthusiasm spent. Firing was such a positive act, and gave the men such a physical release from their emotions, that instincts easily took over from training and from the exhortations of officers.⁷

It is puzzling that Grossman fails to recognize the contradiction of embracing the disparate ideas that soldiers fire too much and with wild inaccuracy on the one hand but do not fire at all during the Second World War. Perhaps it is more indicative of how ubiquitous the phenomenon of excessive firing has been in history that even Marshall's foremost advocate needs to recognize that *too much* fire has been a more impressionable problem than *not enough* fire.

Some comments on the Battle Experience Surveys indicated that this was a noteworthy tendency in the field as well. Major R.C. Graves noticed that, “The [Heavy machine-gun] has tremendous power and the Germans have folded up on 2 occasions

6 Dave Grossman, *On Killing: The Psychological Costs of Learning to Kill in War and Society*, (New York: Back Bay Books, 1996), 9-10.

7 Paddy Griffith, quoted in: *ibid.*, 9.

because this weapon was brought into play. The moral effect is excellent on our own troops; when they hear the heavy pounding.”⁸ And as Major J.P.G. Kemp observed in his notes, “Men appeared to be able to stand almost any amount of physical fatigue, but when we were in defensive positions under heavy mortar and [artillery] fire and the men were unable to hit back at anything, mental fatigue became very noticeable and had to be watched carefully.”⁹ In this case, the inability to take effective action is noted as contributing to mental fatigue and combat stress in the field.

The data from the Battle Experience Questionnaires confirms for us that one of the foremost difficulties facing officers in the Second World War was getting soldiers to *stop* firing, not getting them to start. It is remarkable that, despite the requirements for generating large volumes of fire demanded by the principles of “fire and movement,” many officers expressed concern that their troops were still making grossly excessive use of their weapons. Captain William Bennett of the elite First Special Service Force was one such officer, and claimed that, “Many people seem to favour too unreasoningly automatic fire in lieu of well-aimed rifle shots.” Heavy automatic fire, he warned, quickly betrayed one's position to the enemy, allowing it to be singled out and destroyed. “The clever rifleman,” he said in contrast, “is difficult to discover and his careful shooting will demoralize the enemy.”¹⁰ Major C.K. Crummer, a company commander in the Lincoln and Welland Regiment, noted that his troops took to, “Indiscriminate, very inaccurate firing of inf[antry] weapons to impress large numbers of enemy troops opposing them.”¹¹ The same tendency was noted in tank crews by Captain Pollin, a carrier platoon commander of the Highland Light Infantry, who said that tanks, “Seemed

8 Battle Experience Questionnaire, Major R.C. Graves, LAC RG 24, Vol. 10450, 280.

9 Battle Experience Questionnaire, A/Major J.P.G. Kemp, LAC RG 24, Vol. 10450, 28.

10 Battle Experience Questionnaire, Captain William R. Bennett, LAC RG 24, Vol. 10450, 208.

11 Battle Experience Questionnaire, A/Major C.K. Crummer, LAC RG 24, Vol. 10450, 29.

[to be] inclined to shoot up things without being quite certain that they had a target. Shot our own troops up on a few occasions.”¹² Enemies that could not be visibly identified by troops were often the cause of grossly excessive, panicky fire. Major T.M. Lowe of the Cape Breton Highlanders told of how, at the crossing of the Liri River in Italy, a few hidden German snipers were impeding the bridging process. Six Bren machine gunners emptied multiple magazines worth of ammunition on the snipers' “general location” to try to take them out.¹³ Rampant “speculative shooting” was also noted by Captain Sinkewicz, an intelligence officer who carried out post-combat interviews with troops, and was noticed in particular when the enemy counter-attacked a position that had just been taken by the Canadians, when close combat was likely and fire support from tanks and artillery could be inconsistent.¹⁴

Excessive firing was more than a simple issue of giving away one's position, however. There were also material difficulties with such rampant firing that officers were uncomfortably aware of. Historian Terry Copp has noted that, “Experience had shown that the ammunition problem was acute [for the Canadians] in the [German] counterattack phase. Ammunition fired in the attack was seldom aimed and was therefore wasted.”¹⁵ The questionnaires mirror these concerns. Major John Clarke, for example, advised that more automatic weapons *not* be adopted for the infantry section due to ammunition shortages and the difficulties in rapidly transporting more ammunition across the rugged country of Italy.¹⁶ Similar notes on ammunition expenditure were made by other officers.¹⁷ It is interesting to note here that in his work *The Soldier's Load*

12 Battle Experience Questionnaire, Captain Pollin, LAC RG 24, Vol. 10450, 120.

13 Battle Experience Questionnaire, A/Major T.M. Lowe, LAC RG 24, Vol. 10450, 129.

14 Battle Experience Questionnaire, A/Captain Sinkewicz, LAC RG 24, Vol. 10450, 48.

15 Copp, *Fields of Fire*, 28.

16 Battle Experience Questionnaire, Major John C. Clarke, LAC RG 24, Vol. 10450, 178.

17 Battle Experience Questionnaires, Major W.C. Allan, LAC RG 24, Vol. 10450, 76; Major Froggett,

and the Mobility of the Nation, S.L.A. Marshall claimed that due to the low ratio of fire in the Second World War, ammunition shortages were among the least likely things to happen. “The soldier who is always willing and eager to use his weapon,” Marshall says, “has a reserve in the duty belt of the man next to him who will go along into battle *but will not fire*.”¹⁸ However, data from the Battle Experience Questionnaires indicates this was not the case at all; officers were explicitly asked about ammunition shortages during combat operations. It is true that most (66 percent) reported having never experienced an ammunition shortage, likely reflecting the comfortable industrial and manufacturing advantage enjoyed by the Allies which allowed for consistently good logistical support. But there was nonetheless a significant minority (24 percent) that *had* experienced shortages in small arms ammunition, frequently mortars, grenades, PIAT rounds, and .303 rifle rounds.¹⁹ Shortages were reported to be particularly acute for forward units and those engaging enemy counter-attacks. As Major G.P. Boucher of Le Régiment de la Chaudière commented in his survey, in these situations it was, “good fire control [that] prevents shortage of [ammunition].”²⁰ A lack of fire discipline and control on the part of the troops, which meant excessive firing in combat, could and did lead to ammunition shortages even with the substantial Allied material advantage. As a result, “too much fire” was on occasion seen as a negative phenomenon because of this, and although in hindsight we can appreciate that the weight of the industrial balance meant that the Allies were unlikely to lose a battle because of local supply shortages, it was still a preoccupation at the time.

LAC RG 24, Vol. 10450, 290.

18 Marshall, *The Soldier's Load*, 19. Emphasis in original.

19 Statistics compiled based on answers to survey “H” question 14a, “Was your unit ever short of ammunition in battle?” Overall: “Yes” 38 surveys, “No” 106 surveys, “No Answer” 10 surveys.

20 Battle Experience Questionnaire, Major G.P. Boucher, LAC RG 24, Vol. 10450, 224.

While soldiers firing their weapons too much may have sometimes been seen in a negative light by officers, this phenomenon was ubiquitous upon the battlefield. Many officers recorded instances of it, and tell us that the generation of heavy – even excessive – amounts of fire by the troops was a standard practice in combat. Despite the calls by some officers for more accurate, disciplined fire, sometimes bringing accurate small arms fire to bear against a specific enemy was often not as important as generating fire in large volumes against an enemy position. This was, in fact, written into Allied doctrine. As historian Timothy Harrison Place has explored in his monograph *Military Training in the British Army*, the key to tactics in the Second World War was the principle of fire and movement. Where the enemy's fire made the advance of infantry impossible, bringing fire to bear upon enemy positions – even inaccurately – forced them to take cover, neutralizing them and allowing attacking troops to move forward to a closer range, hopefully to overrun the position.²¹ Shooting at individual enemy soldiers out in the open – where well-trained troops would hardly ever present themselves anyway – was often not as important as directing more general fire against an enemy position, particularly at longer ranges. There were certainly times when controlled fire discipline was preferable, such as when on the defensive and not wanting to give away a position or waste excessive amounts of ammunition. However, when soldiers were advancing across open ground, neutralizing enemy fire with fire of one's own was the best way to survive.

Fire and movement was a tactical principle that had seen extensive application during the First World War, and was equally prominent from 1939-1945. Ideally “fire and movement” tactics were carried out using artillery or tanks to provide this

21 Timothy Harrison Place, *Military Training in the British Army: 1940-1944, From Dunkirk to D-Day*, (London: Frank Cass, 2000), 40.

suppressing fire – as discussed in Chapter Three – but it was just as crucial that infantry small arms were employed towards this end. Period training manuals meant to be employed by British and Canadian troops emphasized this point, claiming that, “When the leading rifle companies come under the effective fire of machine guns and rifles, they will be forced to fight their way forward with their own weapons and such assistance as may be obtained from machine guns, mortars, artillery, and possibly tanks. The action will be one of fire and manoeuvre.”²² Beyond what was prescribed in the training manuals, the tactical principles of fire and movement found widespread application on the battlefield. The Battle Experience Questionnaires include a question on whether or not officers were “able to put the tactical principles of fire and movement, taught as battle drill before going overseas, into practice.” There is considerable academic debate over the helpfulness and efficacy of teaching fire and movement principles to soldiers through the tactically mechanistic and rigid “battle drill,”²³ but the principles of covering movement with strong positional fire found widespread battlefield application nonetheless. Overall, 85 percent of officers indicated that they had put the principles of fire and movement into practice in combat, and the percentage remained consistent for officers in both the Mediterranean and in Northwest Europe.²⁴

The presence of supporting or suppressing fire, in the tradition of fire and movement tactics, is frequently commented upon in the questionnaires. Captain A.H.

22 Great Britain, General Staff, War Office, *Infantry Training: Training and War, 1937*, (London: His Majesty's Stationery Office, 1937), 107.

23 See: Place, *Military Training in the British Army*, 49-62; John A. English, *The Canadian Army in Normandy: A Study of Failure in High Command*, (New York: Praeger, 1991), 107-110; Terry Copp, *Fields of Fire: The Canadians in Normandy*, (Toronto: University of Toronto Press, 2003), 5-30.

24 Statistics compiled based on answers to survey “H” question 11, “Were you able to put the tactical principles of fire and movement, taught as battle drill before going overseas, into practice?” Overall: “Yes” 128 surveys (84.77%), “No” 15 surveys (9.93%), “No Answer” 8 surveys (5.3%). Mediterranean campaign: “Yes” 45 surveys (86.54%), “No” 5 surveys (9.62%), “No Answer” 2 surveys (3.85%). NW Europe campaign: “Yes” 83 surveys (83.84%), “No” 10 surveys (10.1%), “No Answer” 6 surveys (6.06%).

Macleane told of using heavy small arms fire to “silence” German machine-gun positions, as did Captain Armstrong of the Saskatoon Light Infantry, who wrote about using sporadic machine-gun bursts against known enemy positions during the night to sustain a “harassing fire.”²⁵ Armstrong, commanding officer of a machine-gun company, also discussed in his attached notes the wide use of indirect machine-gun fire: firing at a high arc onto an enemy position, like artillery shells, rather than directly at an enemy. He wrote that:

To my mind indirect fire whether night or day, smoke or fog is very often used, even though Direct fire is always the best. Training and practice on Indirect fire...is very important. The [medium machine-gun] which is the principal weapon of my unit is very effective in defensive work + phases of it such as Consolidation Roles but can be used for support in mounted assaults or clearing snipers from wooded areas by spraying the trees from cover of ground or another wooded area.²⁶

When the war of movement bogged down into prolonged grapples over static positions – as it often did in both the Mediterranean and Northwest Europe – patrols in the “no-man’s land” between Canadian and German lines were often carried out at night to probe enemy positions. These patrols were often “covered” by parties carrying plentiful automatic weapons who could provide distracting or supporting fire for the patrol when it became necessary.²⁷ As described by Major Charles Bellavance, a company commander in Le Royal 22e Régiment, “To aid the patrol sometimes we put up a little show far from the point where the patrol is supposed to go,” using lots of unaimed suppressing fire to try and draw the enemy’s attention.²⁸ The FSSF’s Captain William Bennett also observed

25 Battle Experience Questionnaires, Captain A.H. Maclean, LAC RG 24, Vol. 10450, 62; Captain Armstrong, LAC RG 24, Vol. 10450, 73.

26 Ibid., 73.

27 Battle Experience Questionnaire, Major D.S. Beatty, LAC RG 24, Vol. 10450, 234.

28 Battle Experience Questionnaire, Major Charles Bellavance, LAC RG 24, Vol. 10450, 99.

this, and wrote that, “While the scouts were working the remainder were on bellies with weapons aimed at possible targets...ready to fire at first automatic weapon to open. One scout investigating a chicken house, for instance, knew that if he opened [fire] the other scouts would fire in the same general direction he did whether they saw a target or not...it took very little time to get all my weapons working and that helps on night patrols.”²⁹

The production of high volumes of fire such as Bennett describes, despite some of the problems it could cause, was frequently described as great for morale and the confidence of soldiers. It also gave the enemy considerable pause. Lt.-Colonel Gilday recorded this, saying that, “The enemy soon learnt that if he engaged our patrols that all hell immediately broke loose and he became very careful with his own patrols.”³⁰ Harassing and suppressing fire was liberally employed by troops to stave off or defeat enemy patrols and even counter-attacks during the consolidation of a position.³¹ The fact that Canadians were so willing to employ massive small arms fire for patrol work may have been one of the reasons that Major Harold Usher of the Hastings & Prince Edward Regiment claimed that Canadians dominated “no-man's land” with extremely violent patrols. “If we didn't patrol the enemy did,” Usher said, “but the [Canadians] did so much of it that enemy patrols were seldom out or encountered. Initiative can be maintained by dominating 'no man's land.’”³² As a result, German patrols were relatively infrequent along a static front, deterred by the application of great volumes of infantry firepower.³³

29 Battle Experience Questionnaire, Captain William Bennett, LAC RG 24, Vol. 10450, 208.

30 Battle Experience Questionnaire, Lt.-Colonel T.P. Gilday, LAC RG 24, Vol. 10450, 54.

31 Battle Experience Questionnaire, Captain R.D. Bacon, LAC RG 24, Vol. 10450, 282.

32 Battle Experience Questionnaire, Major Harold Hudson Usher, LAC RG 24, Vol. 10450, 227.

33 Interestingly, there is a disproportionately large number of officers from the Italian campaign who attached specific notes about patrols and the large volumes of fire generated to support them. This is likely a reflection of the slower, more static warfare that characterized the entire Italian campaign, at least relative to the NW Europe campaign after Normandy, which was generally more mobile. This is

It is also noteworthy that Canadian soldiers would go well out of their way to try and increase the volume of fire that they could produce with small arms. Major C.K. Crummer observed that his troops would try to salvage extra Bren guns from wrecked carriers to increase the effectiveness of fire and movement tactics, though he noted that a “very close eye must be kept on ammunition in this respect.”³⁴ Captain F.W. Grafton of the Algonquin Regiment noticed the same thing, and commented that, “I saw one Platoon carrying four [Bren] guns and the [required] ammo for each even though [the platoon] was under-strength by seven men.”³⁵ Infantrymen would evidently go to some lengths to ensure that they would generate sufficient firepower on the battlefield, adding additional guns and making certain that their own weapons would be ready for combat at all times. Major A.M. Hamilton of the Dundas, Stormont and Glengarry Highlanders noted that his troops were constantly “zeroing” (adjusting the sights on) their weapons: “Even in battle area zeroing was carried on, two or three men at a time. Made all the difference to a man's confidence in the weapon to know it was zeroed.”³⁶ While not taken from the Battle Experience Questionnaires, reports on the Courts of Inquiry held by the Calgary Highlanders Regiment indicated that shooting accidents, particularly at night, were relatively frequent. Commenting on one incident where a soldier was shot by his own rifle after leaving the rifle cocked and the safety catch off, the Highlanders' Lieutenant-Colonel Ellis noted that, “Men who have fought in action leave the safety catches on their rifles off, due to the need for immediate actions, on many occasions. The accident was apparently caused due to this habit.”³⁷ Having weapons ready for instant action on the

not to say that officers in NW Europe did not experience much the same thing, but they did seem less inclined to specifically comment upon it in their questionnaire answers.

34 Battle Experience Questionnaire, A/Major C.K. Crummer, LAC RG 24, Vol. 10450, 29.

35 Battle Experience Questionnaire, Captain F.W. Grafton, LAC RG 24, Vol. 10450, 145.

36 Battle Experience Questionnaire, Major A.M. Hamilton, LAC RG 24, Vol. 10450, 35.

37 Calgary Highlanders Courts of Inquiry, 26 Nov. 1944, Glenbow Archives, M1961, File 18.

front lines was evidently commonplace enough for such casualties to become fairly routine. The Highlanders' Courts of Inquiry also discussed incidents of sentries being over-zealous in making use of their weapons, and inflicting casualties on friendly troops who did not respond quickly enough to verbal warnings.³⁸ The impression from these sources, then, is that some Canadian troops were perhaps over-anxious to generate more firepower, both by scavenging heavier weapons and by ensuring that their own weapons were prepared and ready for use against the enemy at any moment.

Furthermore, many officers made explicit mention of how they had seen fire and movement tactics put into practice in battle, where the application of heavy small arms fire against the enemy allowed Canadian troops enough time to move forward towards a position. Bringing superior fire to bear in local tactical situations was often the only way to accomplish this. As previously mentioned, the great majority of officers reported having employed fire and movement tactics at some point, and of those some 64 percent claimed to have put fire and movement into practice “often” or “fairly often.”³⁹

Lieutenant-Colonel Gilday laid out in some detail the patterns of covering fire to be used in fire and movement tactics by his 1st Canadian Special Service Battalion, the paratrooper forerunners of the Canadian Airborne Regiment. He wrote that, “Having light machine guns for work was wonderful: the mortar could engage its targets at 6-700 yards. The [light machine-gun] laid down covering fire at 2-300, and the JAR [Johnson Automatic Rifle] (or Bren gun) was used to fight for ground and give the assault group of 2 or 3 men close support for frontal assault from 50 to 75 yards.”⁴⁰ Similarly, though in

38 Calgary Highlanders Courts of Inquiry, 6 March 1945, Glenbow Archives, M1961, File 18.

39 Statistics compiled based on answers to survey “H” question 11, “Were you able to put the tactical principles of fire and movement, taught as battle drill before going overseas, into practice? Often, fairly often, or seldom?” Overall: “Often” 34 surveys (26.56%), “Fairly Often” 48 surveys (37.5%), “Seldom” 46 surveys (35.94%).

40 Battle Experience Questionnaire, Lt.-Colonel T.P. Gilday, LAC RG 24, Vol. 10450, 54.

less detail, Major Crummer noted that fire and movement was used by his men on practically every operation, and Major Harrison of the Calgary Highlanders likewise claimed that fire and movement in the rudimentary “pepper pot” method of battle drill were employed by his troops on a regular basis.⁴¹ At least one other Canadian officer, Major M.B. John of the Royal Canadian Regiment, stated that patrolling was carried out “very much on the lines taught at Battle School” back in England. Patrols were heavily-armed with automatic weapons and grenades, with groups covering one another’s advances with suppressing fire.⁴² Others, however, were quick to distance the use of fire and movement by soldiers from what was taught as “battle drill” on the parade square. Major R.D. Medland, a company commander in the Queen’s Own Rifles, noted in his addendum that:

The principles of fire and movement is not battle drill. Rather battle drill is only a form, a good one, of expressing and explaining fire and movement. To my knowledge battle drill, as such, has never been used. It is only the expedient by which the principle may be taught. The principle of fire and movement is as old as war itself, whereas battle drill, as we know it, is comparatively new. Many of the ideas embodied in the teaching of battle drill give a completely faulty impression of actual battle conditions. We can accept the principle of fire and movement, right – but the speed and inaccuracy with which battle drill movements are carried out would prove costly and unsuccessful. However, careful [reconnaissance], repetition, over and over, of plans and orders, then the employment of fire and movement, are a firm guarantee to success.⁴³

Whatever the efficacy of “battle drill” training, fire and movement protocols were a mainstay of Canadian infantry tactics, both for major advances and for patrol work; and

41 Battle Experience Questionnaires, A/Major C.K. Crummer, LAC RG 24, Vol. 10450, 29; A/Major Harrison, LAC RG 24, Vol. 10450, 191. For more on the “pepper pot” method of fire and movement, see: Place, *Military Training in the British Army*, 69-72.

42 Battle Experience Questionnaire, Major M.B. John, LAC RG 24, Vol. 10450, 151.

43 Battle Experience Questionnaire, Major R.D. Medland, LAC RG 24, Vol. 10450, 271.

as Medland suggested, the principles of covering movement with small arms fire dated back to the late nineteenth century. Just as they had during the First World War, fire and movement tactics were promoted as a way to move “soft” infantry soldiers through the “fire-swept zone” created by modern weaponry. Fire and movement was, furthermore, predicated on the idea that one could use infantry small arms fire to fill the gap left by artillery in making the enemy stop shooting back and take cover. It was an explicit way of promoting of large volumes of relatively inaccurate, unaimed fire intended not necessarily to hit the target, but to neutralize the target until the infantry could get closer. Its widespread use in the Canadian army further demonstrates the ubiquity of heavy infantry fire in everyday tactical situations. In the offensive, fire and movement would have been less effective than the officers indicated that it was, with only a minority of soldiers attempting to generate that fire. Rather, given the tendency of trained soldiers to fire their weapons a great deal, the fire and movement tactics can be viewed as a means of capitalizing upon the psychological desire to shoot, even when accuracy and even intent to kill were not strictly necessary.

As a final point, we can determine something about the “ratio of fire” from officers' attitudes towards what they observed their own troops doing in battle. Many officers, supported by what was taught in the training and doctrinal manuals, believed that the ideal fire for soldiers was not to gross excess, but controlled and highly disciplined, able to fire in great quantities when necessary for fire and movement, but also able to hold fire when ordered to. The *ideal* that officers tried to instill in their troops was one of discipline and control; officers wanted to be able to control the firing patterns of their men, and for their men to be able to control themselves and not be overly

reckless or enthusiastic with their shooting in combat. As has been noted, many officers *did* observe that such undisciplined fire was prevalent, and that this could be a negative phenomenon. Also worthy of mention, though, is that many Canadian officers made specific mention of how impressed they were by the superior German fire discipline. “The Germans are very good,” said Major G.E. Colgate, “at holding their fire until the last minute.”⁴⁴ Captain A.M. Matheson of the South Saskatchewan Regiment claimed that German machine-gun crews were primarily effective because of their, “rapid rate of firing and fire control used by Germans.”⁴⁵ Similarly, Captain J.A.D. Graham of the Cameron Highlanders noted that the, “Enemy allowed us to pass through their positions [without firing at us], and later counter-attacked from our rear and flanks.”⁴⁶ This seemed to be a fairly common occurrence, particularly at night when visibility was poor and it was easy to walk right past someone in the dark without knowing it. Small groups of disciplined German soldiers would hold their fire until a Canadian unit had passed them completely, and then open up with “murderous fire” from flank or rear positions.⁴⁷ This could provide them with local surprise during an attack, particularly at night, and was regarded as a hallmark of superior training by the Canadian officers. “The...attack had not managed to draw the enemy out,” commented Major A.M. Hamilton at one point in his notes, “The German will not give away his position by random firing; it takes a full scale attack to draw down the defensive power.”⁴⁸ German tanks were observed to maintain a similar discipline and economy of fire: if they could, German tanks would wait for the Canadians to show themselves first. And as Captain Sinkewicz noted, “the

44 Battle Experience Questionnaire, A/Major G.E. Colgate, LAC RG 24, Vol. 10450, 116.

45 Battle Experience Questionnaire, Captain A.M. Matheson, LAC RG 24, Vol. 10450, 55.

46 Battle Experience Questionnaire, A/Captain J.A.D. Graham, LAC RG 24, Vol. 10450, 34.

47 Battle Experience Questionnaires, A/Major T.M. Lowe, LAC RG 24, Vol. 10450, 129; Lt.-Colonel Charles Petch, LAC RG 24, Vol. 10450, 100.

48 Battle Experience Questionnaire, Major A.M. Hamilton, LAC RG 24, Vol. 10450, 35.

[tank] who moves first gets shot.”⁴⁹

The superiority – in at least some cases – of German fire discipline stood in sharp contrast to the demonstrable Canadian tendency to enter battle with weapons blazing to excess, at least in the minds of some of the officers who filled out the questionnaire. That they made note of the superior German fire discipline implies that this was an ideal that they strove for, but often were not meeting, with the habits of their own troops. When Canadian troops *did* achieve good fire discipline, though, it was portrayed very favourably by the officers. Discussing night operations, Major R.G. Liddell, for example, spelled out the success of his company through practicing, rather than fire and movement, extreme fire discipline and surprise. “Absolute silence helped to demoralize enemy,” Liddell reported, “who was only fired on at very close ranges.”⁵⁰ While a few other mentions were made,⁵¹ there were many more Canadian officers commenting on the effectiveness of German fire discipline than on that of their own troops. The very idea of “disciplined” fire was that it should be subject to strict control rather than being wastefully excessive, and while it stood as an ideal that some officers would have liked to have achieved, the reality seems to have been that the Canadian troops were far more inclined to shoot their weapons to wild excess than they were to be frugal and controlled with the firepower available to them.

It is difficult to determine whether “too much fire” was a bona fide problem for the Canadian troops. The doctrine of fire and movement, after all, seemed to encourage the generation of large volumes of fire by the infantry section, and the officers indicated that it was used to good effect in battle. No doubt it was psychologically helpful to the

49 Battle Experience Questionnaire, A/Captain Sinkewicz, LAC RG 24, Vol. 10450, 48.

50 Battle Experience Questionnaire, Major R.G. Liddell, LAC RG 24, Vol. 10450, 281.

51 See: Battle Experience Questionnaire, Lt.-Colonel Charles Petch, LAC RG 24, Vol. 10450, 100.

Canadian soldiers to be able to bring such power to bear. At the same time, though, excessive firing wasted ammunition, eliminated the element of surprise, and gave away the shooter's position, particularly at night. And whether it was good or bad, the surveyed officers believed that the Canadian disposition for inordinate use of firepower stood in sharp contrast to the Germans' exercise of far more disciplined fire control within the ranks, and believed this to be a product of superior German training.

The surveys are consistent, then, with observations on the tendency of soldiers to fire their weapons too much, rather than not enough. At no point in the surveys is there any complaint about inadequate fire being generated by the infantrymen; quite the contrary, there are only complaints about *too much* indiscriminate fire. Even these complaints, however, come from a minority. Many officers seemed content with the high volume of fire that their soldiers were producing, and used it to their advantage in battle. Having tighter, more disciplined control over troops' firepower may well have been an ideal, at least for some officers, but it went largely unrealized in practice. What some of them *wanted* was more disciplined, controlled fire, implying that this was something that they *did not have* at the time. Instead, what they had were troops who acted on the very human urge to fire their weapons more to excess than not at all, in spite of S.L.A.

Marshall's claims to the contrary.

Small Arms Effectiveness in Battle

One of the major objectives of the Battle Experience Questionnaires project was to determine the battlefield use and effectiveness of the infantry small arms employed by the Canadian army during the war. Between the general survey and the specific infantry survey there are five question groups dealing specifically with small arms use, as well as

remarks asking for detailed addendum notes on the best weapons for an infantry section and any novel uses of weapons.⁵² The questions about weapons use are one of the most prominent aspects of the survey, and deal with the issues of which weapons were used or not used, which were effective and had the most serious impact upon soldiers' morale, and even which weapons were being used *against* the Canadians by the enemy forces. Many officers also offered detailed comments on the various problems of small arms use in their attached notes, highlighting in particular which specific weapons were useful and which were found wanting (or were simply not used at all) in battle.

Reading through the surveys, one is struck at the great attention to detail on the part of the officers. Virtually all of the respondents had good answers to the survey questions, giving a host of specific commentaries on weapons use or misuse that display a considerable depth of personal knowledge and experience with the weapons and the soldiers using them. Officers were eager to point out in their notes what their soldiers had found to be the most effective weapons available, including why and how they had been used. Similarly, they were not afraid to offer indictments of weapons that in their experience were mechanically faulty, of little value, or were not being employed properly by the troops. In displaying this degree of awareness and offering such commentary, the junior and senior officers of the Battle Experience Questionnaires showed that they had been paying attention to their soldiers' actions at a detailed level that S.L.A. Marshall fails to give officers credit for. In proclaiming officers to be universally ignorant of what was actually occurring in combat, Marshall does both himself and the Allied officer corps a great disservice.⁵³ Officers were far more aware of their subordinates' actions than he

52 See Appendix: Survey "A" questions 1.(a)(b), 2.(a)(b); Survey "H" questions 1., 2., 3.

53 S.L.A. Marshall, *Men Against Fire*, 53-54.

allows for, as the detailed responses to the questionnaires on issues of weapons use would indicate. Perhaps most importantly for Marshall's "ratio of fire," when small arms were being used improperly – or not at all – the Canadian officers made very specific note of it in their surveys. It is extremely probable that if officers were close enough to their men to notice persistent weapon malfunctions, section small arms preferences, volumes of fire, and novel new uses for existing weaponry, they would have been close enough to notice that only a handful of their soldiers would ever fire their weapons at all.

A good place to begin examining the surveys' data on small arms is with the available statistics on actual weapons usage. Two questions on the Battle Experience Questionnaires deal directly with these points, question #1 on infantry survey "H" which specifically asks which weapons were used by the officer's unit in battle, and question #1 on general survey "A" which discusses weapons used by the Germans *against* the Canadians and their effects upon morale. Virtually every officer who filled out a questionnaire answered at least these two questions, with only five giving no answers at all. For infantry survey "H," asking about the weapons "actually used in action," almost every officer reported use of the Rifle (153 surveys), the sub-machine gun (149 surveys), and the Bren light machine-gun (152 surveys). The PIAT (141 surveys), 2-inch and 3-inch Mortars (139 and 140 surveys respectively), and the 6-Pounder anti-tank gun (125 surveys) were also extensively used. Grenades, particularly the No. 36 fragmentation grenade, also known as the "Mills bomb," were also widely reported to be used (142 surveys), in startling contrast to S.L.A. Marshall's own observations that grenades were practically never used by soldiers.⁵⁴

54 S.L.A. Marshall was generally very disparaging of the grenade, based upon his "observations" in the Second World War. He wrote that: "With all hands carrying eight grenades, the number of men making *any use of the weapon at all* was consistently less than six per cent of the total in any general action. Research showed further that the grenade was rarely put to any practical use in the initial stage of an

Perhaps the most informative aspects of the surveys dealing with weapons' usage are the questions discussing the effectiveness, or lack thereof, of small arms. Question #2 on survey "H" – Infantry asked officers about whether any of the small arms they had witnessed used in action had been "outstandingly effective," while question #3 asked the same thing about weapons being "ineffective." While these should not be interpreted as concrete statistics on small arms usage in battle, they do accurately detail what Canadian officers observed in terms of soldiers making use of their weapons. These numbers should be taken for what they are: the general impressions of men in battle, not definitive, rigorous statistics on small arms fire. Nonetheless, given that the surveys were filled out by officers who had personally fought using these weapons and had commanded and observed other soldiers doing so, the reliability of these impressions is probably just as high as – and likely higher than – anything produced by S.L.A. Marshall's interviews.

Not every officer noted a particular weapon as being especially effective or ineffective in battle; those who did illustrate the great variety of experiences, as there were many disparate views on weapon effectiveness. A few particularly prevalent patterns of weapons use stand out, however. The PIAT was listed as being "outstandingly effective" far more than any other weapon (it was listed as such in 74 surveys).⁵⁵ This was due not only to its tank-killing power, but also owing to the fact that its high-explosive bomb could also be put to good use against "soft" infantry targets,

amphibious attack. This was also true in Europe." While the wording and lack of specificity in the Battle Experience Questionnaire cannot allow any firm conclusions to be drawn, the fact remains that close to 90 percent of Canadian officers indicated in their Battle Experience Questionnaires that they had witnessed grenades being used in action. Therefore, Marshall's correctness on this point can also be brought into question. Marshall, *The Soldier's Load*, 13-14.

⁵⁵ All statistics on weapons effectiveness compiled from survey "H" question 2: "Have you found any of these weapons particularly effective? If so, which and why?" and survey "H" question 3: "Have you found any of these weapons ineffective? If so, which and why?"

either in direct or indirect roles, making it a good source of suppressing fire.⁵⁶

Furthermore, only three officers listed the PIAT as being an “ineffective” weapon.

Weapons that could produce significant fire effects or high volumes of fire tended to be selected as “outstandingly effective” on this question. The Bren light machine-gun was noted as especially effective in 54 surveys, the 3-inch Mortar in 44, the No. 36 “Mills bomb” grenade in 33, and the standard-issue Rifle in 15 surveys. Officers seemed to have a striking confidence in the reliability, consistency, and volume of small arms fire being generated by their infantry units.

Perhaps even more noteworthy is the reaction of many officers to the perceived “ineffective” weapons. Officers typically listed weapons as “ineffective” for several reasons: mechanical difficulties inherent to the weapon, a perceived lack of “stopping power,” or because troops had no confidence in the weapon and did not use it. The Sten sub-machine gun, for example, received over one-third of all complaints (45 officers listed the Sten as “ineffective,” 67 officers complained about all other weapons),⁵⁷ and for a combination of all three reasons. Mechanically the Sten was consistently regarded as very unreliable. Lieutenant-Colonel P.W. Bennett noted the Sten as ineffective, “due to liability to jam due to dirt, troops have no confidence in it,”⁵⁸ and Major Cyril Wrightman said that in his experience troops and officers threw their Stens away in favour of American-made automatic weapons. “Never very safe,” Wrightman said of the Sten, “will let you down when most needed.”⁵⁹ “Failure to fire when needed (frequent),” was Captain F.W. Grafton's comment on the Sten.⁶⁰ Dozens of other Canadian officers made

56 Battle Experience Questionnaire, Captain H.S. Lamb, LAC RG 24, Vol. 10450, 159.

57 Statistics compiled from survey “H” question 3. See Appendix for a more detailed break-down.

58 Battle Experience Questionnaire, Lt.-Colonel P.W. Bennett, LAC RG 24, Vol. 10450, 81.

59 Battle Experience Questionnaire, Major Cyril Wrightman, LAC RG 24, Vol. 10450, 68.

60 Battle Experience Questionnaire, Captain F.W. Grafton, LAC RG 24, Vol. 10450, 145.

similar notes about the mechanical unreliability of the Sten, and a number also reported that the weapon did not have sufficient killing power, particularly when compared to the sub-machine guns available to the other Allied armies. “Not enough stopping power,” reported Captain Orest Dutchak of the Algonquin Regiment, “Thompson Sub[-machine gun] preferred.”⁶¹ Captain Tennant likewise claimed that, in his experience, the Sten was, “NOT hard enough hitting,” and that, “man can still fight after being hit.”⁶² Major Ostiguy pointed out the same thing about the lack of killing power, noting that the Sten was so mistrusted that, “men preferred rifles.”⁶³

The officers reported in some detail other weapons that they found to be ineffective, though the Sten sub-machine gun was far and away considered the least usable weapon, and the rest varied considerably according to experience. For instance, Captain A.D. Willick, discussing the 6-pounder anti-tank gun, noted how it, “is only effective when right up with the [forward companies] and this is not always possible. Some 6-pounder crews fire very few if any rounds in action.”⁶⁴ The No. 69 fragmentation grenade, designed to be less destructive than the popular No. 36, was derided by some officers for being a, “Useless weapon, [with] no killing power,” and simply, “not lethal.”⁶⁵ The officers' standard-issue .38 caliber pistol was also treated with some degree of scorn. It was the second-most mentioned weapon for “ineffectiveness” in the surveys after the Sten, with 20 officer complaints, and seems to have generally been

61 Battle Experience Questionnaire, Captain Orest P. Dutchak, LAC RG 24, Vol. 10450, 124.

62 Battle Experience Questionnaire, Captain Mark Tennant, LAC RG 24, Vol. 10450, 209.

63 Battle Experience Questionnaire, Major J.W. Ostiguy, LAC RG 24, Vol. 10450, 192. The preference for carrying rifles over the Sten was also noted in: Battle Experience Questionnaire, A/Major I.H. Louson, LAC RG 24, Vol. 10450, 8.

64 Battle Experience Questionnaire, Captain A.J. Willick, LAC RG 24, Vol. 10450, 118.

65 Battle Experience Questionnaires, Captain B.R. Howard, LAC RG 24, Vol. 10450, 157; Major H.G. Dawson, LAC RG 24, Vol. 10450, 187. The No. 69 grenade was cited as “ineffective” by 11 officers and as “outstandingly effective” by only one.

considered to have been of “No use” in combat.⁶⁶

Of course, relatively few weapons were considered to be uniformly ineffective, and even the Sten gun was listed as ineffective by less than one-third of all responding officers. It was more common for officers to note things such as: “All weapons are outstandingly effective when used properly + in the right circumstances.”⁶⁷ What these surveys tell us, however, is that when weapons were ineffective in combat, for any reason – persistent mechanical issues, a lack of killing power, or simple disuse – Canadian officers noticed. In the Battle Experience Questionnaires they demonstrate a considerable awareness of the problems underlying weapon ineffectiveness for their soldiers. In contrast to the portrait of the aloof, blissfully uninformed officer of S.L.A. Marshall's *Men Against Fire*, the Canadian experience seems to have revolved around officers firmly grounded in the tactical realities facing themselves and their soldiers. If there were persistent difficulties with weapons or with the generation of fire because of those weapons, junior and senior officers noticed, and many of them indicated as much when filling out their questionnaires.

Since Canadian officers were clearly more tactically aware of their soldiers than Marshall allows, it stands to reason that had they observed any problems as significant as the 15 to 20 percent “ratio of fire” that *Men Against Fire* expounds, this would have been communicated frequently and by most officers in their surveys. Given what officers *did* report on in their surveys, one can reasonably assume that this is something that would have been flagged as a difficulty. It is fascinating, then, that no officer saw fit to mention anything of the kind. With the notable exception of the Sten sub-machine gun and a few

66 Battle Experience Questionnaire, Major T.S. Ketcheson, LAC RG 24, Vol. 10450, 190. Also, while the pistol was listed as “ineffective” by 20 officers, it was not listed as “outstandingly effective” by anyone.

67 Battle Experience Questionnaire, Captain William R. Bennett, LAC RG 24, Vol. 10450, 208.

other weapons that officers had problems with on an individual level, there is no indication at all of systemic weapon ineffectiveness or any general failure on the part of soldiers to make use of their weapons. Fire from rifles and from Bren light machine-guns, the most common weapons, was frequently described as, “Consistant [*sic*], useful in all types of operations,” “accurate and dependable,” and of having “great killing power.”⁶⁸ Infantry rifles were not one of the top-ranked weapons for “outstanding effectiveness” among the officers, but rifles were also never complained about as being “ineffective,” and appear to have been a reliable, standard weapon, the use of which was typically efficient enough for everyday combat purposes. Even so, several officers did note the rifle as being particularly effective in battle. Major A.M. Hamilton made special note of how his, “men [are] good shots, feel confident with rifle. Deadly accurate, made any enemy movement risky.”⁶⁹ The rifle, as well as the Bren gun, were both singled out by Major Liddell as being effective in combat due to the “Shoot to kill attitude of t[roo]ps with good [fire discipline] training.”⁷⁰ The rifle's accuracy and killing power were noted by several others, and while the weapon may not have been terribly glamorous there is every indication that riflemen used them to satisfactory effect in battle.⁷¹ That it was favoured by some officers over the automatic Sten gun, which could generate much higher volumes of fire when it functioned correctly, is also noteworthy. As the standard-issued weapon of any infantry company, the .303 calibre rifle was the most pervasive weapon in the Canadian Army. If there had been such massive systemic problems with

68 Battle Experience Questionnaires, Captain G. Fawcett, LAC RG 24, Vol. 10450, 123; A/Major T.M. Lowe, LAC RG 24, Vol. 10450, 129; Captain Edward Brady, LAC RG 24, Vol. 10450, 33.

69 Battle Experience Questionnaire, Major A.M. Hamilton, LAC RG 24, Vol. 10450, 35.

70 Battle Experience Questionnaire, Major R.G. Liddell, LAC RG 24, Vol. 10450, 281.

71 For additional comments on the rifle, see: Battle Experience Questionnaires, Major J.W. Ostiguy, LAC RG 24, Vol. 10450, 192; Major R. Rutherford, LAC RG 24, Vol. 10450, 74; Major D. McG. Archibald, 66.

getting soldiers to do so much as fire it, then the rifle would almost certainly have been listed as “ineffective” by more than one solitary officer.⁷²

Additionally, the other staple infantry small arms – the machine guns, grenades, mortars, and anti-tank weapons – all received considerable praise from the officers for battlefield performance. Weapons that could produce large volumes of fire were typically well-received, though there was also an excellent reception of weapons that had lots of “killing effect” or a decisive impact upon the enemy's morale. The Bren light machine gun was put down as an “outstandingly effective” weapon by 54 officers. It was highly accurate, and several officers commented favourably on its “beaten zone,” the area around it that could easily and effectively be covered by its firepower.⁷³ Others, including Major Norman Wilson-Smith of the Royal Winnipeg Rifles, noted how the Bren was, “accurate and if used well could 'shoot down' German [machine guns].”⁷⁴ Another officer said of his Bren guns that they were, “effective [because] of handiness at close quarters + volumes of fire.”⁷⁵ Sub-machine guns, though rarely the Sten specifically, were also praised for many of the same reasons. Captain Edward Brady praised the U.S.-issued Thompson sub-machine gun, for example, as having, “Great killing power, dependability, [and effect of] lowering of enemy morale.”⁷⁶ Flame-throwers, though evidently only employed on occasion by the Canadians,⁷⁷ were

72 Captain Gordon Crutcher of the Carleton and York Regiment put the rifle down as ineffective, citing “marksmanship indifferent” as his reason. See: Battle Experience Questionnaire, Captain Gordon Crutcher, LAC RG 24, Vol. 10450, 207.

73 Battle Experience Questionnaires, Captain M. Pariseault, LAC RG 24, Vol. 10450, 18; Major A.C. Ross, LAC RG 24, Vol. 10450, 60.

74 Battle Experience Questionnaire, Major Norman Wilson-Smith, LAC RG 24, Vol. 10450, 113. Also: Captain T.H. Burdett, 78.

75 Battle Experience Questionnaire, Captain A.V. Malone, LAC RG 24, Vol. 10450, 31.

76 Battle Experience Questionnaire, Captain Edward Brady, LAC RG 24, Vol. 10450, 33.

77 Only 24 officers reported having ever seen the flame-thrower employed in action by their units. Survey “H” question 1. Of these, 15 found the weapon to be “outstandingly effective,” and no officers at all found it to be “ineffective.”

reportedly devastating to enemy morale, and were noted for their, “good moral effect, knocks out the [enemy's] will to fight,” and how it was “very effective and terrifying when properly used.”⁷⁸ Grenades, particularly the No. 36 “Mills bomb,” were also considered to be highly effective, in surprising contrast to Marshall's later observations on their use in combat. Thirty-three officers found the No. 36 fragmentation grenade to be “outstandingly effective,” highlighting it as one of the “essential” infantry arms and praising the grenade's “killing effect and faith of men in [the] weapon.”⁷⁹

While there were individual complaints about various weapons, these amounted to less than 5 percent of responders for all but a select few armaments, such as the Sten gun or the .38 caliber pistol that seemed to be systemically troublesome or useless in the Canadian experience.⁸⁰ The general trend was that officers were either extremely pleased with the fire and killing effects of the small arms available to their troops, or else they were sufficiently satisfied with them to not believe they warranted much comment either way. In this regard, the consistency of the surveys' findings is worth noting: no weapon ranked highly as being “outstandingly effective” was cited as “ineffective” by more than two or three officers.⁸¹ Weapons that were effective were, by and large, regarded as such across all of the infantry officers being surveyed.

There are also comments in the officers' addendum notes that are worth paying attention to. The questionnaire specifically asked infantry officers to attach any

78 Battle Experience Questionnaires, Captain J.C. Watt, LAC RG 24, Vol. 10450, 173; A/Major Harold Mortimer Cunningham, LAC RG 24, Vol. 10450, 188.

79 Battle Experience Questionnaires, Major Allister Myles MacMillan, LAC RG 24, Vol. 10450, 79; Major R.J. Orr, LAC RG 24, Vol. 10450, 127.

80 See **APPENDIX X** for a detailed break-down of the data.

81 See Appendix B. There are two possible exceptions to this. First is the 2-inch mortar. 10 officers rated the 2-inch mortar as “outstandingly effective,” and 17 rated it as “ineffective.” The second is the sub-machine gun. While 45 officers specifically rated the Sten SMG as “ineffective,” 17 officers rated the “SMG” as “effective.” Of these, however, only a handful specifically noted the *Sten* as being an effective weapon – most who rated the SMG highly were either referring to other SMG designs, such as the Thompson, or else were just referring to it as a broad category.

additional comments that they might have had on the subject of the best infantry section weapons. Dozens of officers replied to this particular question, and while many of them had negative comments about the Sten gun and occasionally other weapons, the great majority indicated that they found the weapons currently carried by the infantry section to be, “adequate,” “satisfactory,” and “effective.”⁸² “Infantry weapons,” commented Captain Yuile, “are sufficient and very effective. The PIAT as we learnt by bitter experience should always be carried by platoon.”⁸³ Recalling an experience at Ortona in Italy, Major John Clarke mentioned that his, “Battalion [was] cut off and surrounded for 48 hrs. by paratroopers. [We] beat off several attacks by good use of infantry weapons, and [the] determination of [our] men.”⁸⁴ Captain Leonard James Gouten of the Royal Canadian Regiment also commented on how the size and weapons of the infantry section were, “ideal for close-quarters + hand-to-hand fighting, easy to control – but for [company] attacks, additional men would give greater fire-power, especially for the fire [platoons] covering the attacking [platoons].”⁸⁵ And Captain Edward Maxted, also of the Royal Canadian Regiment, commented similarly on how the weapons used and firepower produced, “are quite adequate...to meet any circumstances or situation.”⁸⁶ The addendum comments on the surveys underscore the other data on weapons use and effectiveness: while a few officers had complaints about individual weapons (usually the Sten) most who took the time to comment expressed complete satisfaction with the effectiveness of

82 For a few of the comments on the adequacy of section weapons, see: Battle Experience Questionnaires, A/Major John Irvin Mills, LAC RG 24, Vol. 10450, 36; Major A.M. Hamilton, 35; Major Allister Myles MacMillan, 79; A/Major D.M. Ripley, 83; Captain Pollin, 120; Lt.-Colonel Cahrles Petch, 100; A/Major T.M. Lowe, 129; Major M.B. John, 151, Captain Mark Tennant, 209; Captain James Bulloch, 283.

83 Battle Experience Questionnaire, A/Captain Yuile, LAC RG 24, Vol. 10450, 30.

84 Battle Experience Questionnaire, Major John C. Clarke, LAC RG 24, Vol. 10450, 178.

85 Battle Experience Questionnaire, Captain Leonard James Gouten, LAC RG 24, Vol. 10450, 206.

86 Battle Experience Questionnaire, Captain Edward Kenneth Maxted, LAC RG 24, Vol. 10450, 295.

the weapons and fire of their soldiers. No surveys were located that complained about weapon usage or a lack of firepower on the part of troops – any complaints tended to corroborate the idea that if there was a problem, it stemmed from the soldiers firing their weapons *too much*.

So using the statistics on weapons use and effectiveness, we can make a few general comments on the Canadian experience of war at the tactical level. Officers typically perceived most key infantry small arms – the rifle, the machine gun, the grenade, etc. – as effective weapons in combat, producing sufficient fire to sustain tactical fire operations and kill the enemy. Officers tended to be close enough to the sharp end of the fighting, however, to make note of which weapons were *not* being used effectively, and why, as well as offering suggestions and recommendations on how to improve the weapons and their application in combat. The idea, then, that officers could have noticed all manner of soldiers' difficulties with weapons, from mechanical failure to inaction and other ineffectiveness, but remained simultaneously unaware that only 15 percent of their troops would ever make any use of their small arms deserves a measure of skepticism. From the detailed problems that officers *did* observe, as well as from their overwhelming observations as to the effectiveness of their troops' weapons use, we can conclude that Marshall's "ratio of fire," with only 15 to 20 percent of soldiers shooting their weapons, was not a significant problem for the Canadian army in the Second World War.

The Problem of the Replacement Soldier

An aspect of the surveys that must still be brought up are the explicit criticisms and concerns that officers *did* have. As we have seen, complaints about weaponry, the

effectiveness of fire, or the soldiers under their command were rare among the Battle Experience Questionnaires. But the surveys also address issues of what the respondents perceived to be causing ineffectiveness in the Canadian Army, and officers were not shy about making themselves heard on the issue. The most persistent comments about combat ineffectiveness in the surveys deal with the problem of reinforcement soldiers, those troops brought in to replace losses sustained by a unit in combat. Officers consistently observed that, while they were not universally poor soldiers, replacement troops tended to be of lower quality, and some surveys indicated real problems stemming from reinforcements. The inclusion in the surveys of details on the perceived ineffectiveness of these soldiers again demonstrates the sensitivity of officers to the tactical and social problems of their units, with the strong implication that if they could notice this degree of ineffectiveness on the part of the reinforcements, they doubtlessly could have noticed it in the rest of their soldiers as well. These details also suggest a way in which S.L.A. Marshall's "ratio of fire" numbers might be tentatively reconciled with the experience of some parts of the Canadian Army in the Second World War, as there seems to have been one area of the Canadian Army – the "green" reinforcements – that might have actually been as combat-ineffective as Marshall believed all soldiers were.

Many officers surveyed for the Battle Experience Questionnaires believed that the combat effectiveness of their units was seriously undermined by combat losses. According to data compiled from the surveys, just over 81 percent of all officers reported having had infantry sections in their command go into battle under-strength due to combat losses. The numbers are roughly the same between the different Canadian

campaigns, and are only slightly higher for the Mediterranean theater of operations (almost 83 percent reporting under-strength) than for Northwest Europe (80.8 percent), indicating the presence of a notably consistent problem.⁸⁷ This is not surprising, given the staggeringly high casualty figures for the Canadian Army in Europe – over 10,000 men killed, wounded or missing between 20 September and 7 November 1944 alone.⁸⁸ Being endemically under-strength at the sharp end of infantry combat, the section, meant that the size of these sections was often greatly reduced.⁸⁹ As a result, many officers believed that the combat effectiveness of infantry sections was compromised and reduced. When asked in the surveys, 31 percent of responding officers noted that these combat-reduced infantry sections were not adequate for close-quarters fighting; the number decreased to 26 percent in the Mediterranean, and increased slightly to 33 percent in Northwest Europe.⁹⁰

The replacements that were brought in to take the place of dead and wounded Canadian soldiers were not highly regarded by the officers who had to command units reinforced by them. The Battle Experience Questionnaires included a question about the efficiency of “casualty replacement” soldiers, allowing answers of “High,” “Moderate,” or “Low.” Overall, only about 5 percent of officers rated the quality of reinforcements as

87 Statistics compiled from survey “H” question 10(a): “Did your section go into battle under W.E. strength?” Overall: “Yes” 123 surveys (81.26%), “No” 23 surveys (15.23%), “No Answer” 5 surveys (3.31%). Mediterranean campaign: “Yes” 43 surveys (82.69%), “No” 7 surveys (13.46%), “No Answer” 2 surveys (3.85%). NW Europe campaign: “Yes” 80 surveys (80.81%), “No” 16 surveys (16.16%), “No Answer” 3 surveys (3.03%).

88 Copp, *Cinderella Army*, 177.

89 According to statistics compiled from Survey “H” question 10(b): “What was the average number of [other ranks] in your section?” The average taken from all responding officers was 5.63. Average taken from all officers in the Mediterranean theater was 5.463. Average taken from all officers in the NW Europe theater was 5.714. These numbers should be taken with a grain of salt, as they likely compilations made based upon officers' rough estimates, rather than hard statistical research.

90 Statistics compiled from survey “H” question 10(d): “In your view, did your sections at the strength given under (b) prove adequate for close quarter fighting?” Overall: “Yes” 81 surveys (55.48%), “No” 45 surveys (30.82%), “No Answer” 20 surveys (13.7%). The unusually high percentage of officers giving no answer to the question likely has to do with those who answered “No” to question 10(b) not bothering to provide an answer.

“High,” though this rose to 8 percent in the Mediterranean and went down to 4 percent in Northwest Europe.⁹¹ Most officers rated reinforcements as “moderately” efficient soldiers, though there is a significant disparity between the Mediterranean and Northwest European theaters on this question. In Sicily and Italy 65 percent of officers rated reinforcements as “Moderate” and only 16 percent as “Low,” whereas in Northwest Europe 57 percent of officers chose “Moderate” and 32 percent rated the replacement soldiers as having “Low” efficiency.⁹² This undoubtedly reflects the serious manpower crisis brought on by the tremendous losses suffered by the Canadian Army in Normandy and fighting along the Channel coast. While these numbers are obviously very generalized, they nevertheless reflect that replacement soldiers were only rarely held in high regard, and were much more likely to be seen as a hindrance, particularly in Europe following D-Day.

Those Canadian officers who spoke of the reinforcements in their addendum notes were likely to describe them in particularly disparaging terms. Since many of the replacement soldiers were re-allocated to the infantry from other supporting branches of the army, such as logistics, signals, or artillery, one of the chief complaints had to do with their physical condition and lack of fieldcraft skills. “Reallocated troops were NOT hard physically,” complained Major Thomas McCoy of the Essex Scottish Regiment. “They did NOT know the tremendous capabilities of the human body. They had NOT been taught hardships – did NOT know how to look after feet. Wanted to quit.”⁹³ Captain

91 Statistics compiled from survey “H” question 10(f): “Was their [the casualty replacements] general standard of efficiency high, moderate, or low?” Overall: “High” 8 surveys (5.63%), “Moderate” 85 surveys (59.86%), “Low” 38 surveys (26.76%), “No Answer” 11 surveys (7.75%).

92 Also compiled from survey “H” question 10(f). Mediterranean theater: “High” 4 surveys (8.16%), “Moderate” 32 surveys (65.31%), “Low” 8 surveys (16.33%), “No Answer” 5 surveys (10.2%). NW Europe theater: “High” 4 surveys (4.3%), “Moderate” 53 surveys (56.99%), “Low” 30 surveys (32.26%), “No Answer” 6 surveys (6.45%).

93 Battle Experience Questionnaire, A/Major Thomas McCoy, LAC RG 24, Vol. 10450, 16.

Yuile believed much the same thing, and said that, “The physical condition of reinforcements generally speaking was poor and remustered personnel were unable to stand up to long marches and be expected to fight efficiently.”⁹⁴ Major Carmichael, who fought in Normandy, remembered how, “reinforcements that came to use in large numbers in August/September were [artillery] personnel and these men were willing – even determined – but they were not up to infantry standards in infantry work...we nearly liquidated the lot by marching them 60 to 70 miles.”⁹⁵ Captain Gordon Crutcher, fighting in Italy with the Carleton and York Regiment, commented on how, “Physical and mental fatigue under battle conditions was highest in new recruits.”⁹⁶ Finally, Captain W. Parker of the Royal Hamilton Light Infantry had a few words to say about infantry reinforcements that are worth noting:

More care could be taken in sending men as reinforcements to an infantry [battalion]. Men who have spent all their time as clerks, or in other sedentary occupations, should be given more physical training in holding units. One man was received with a medical category under which was written “Unfit for marching” or words to that effect. No doubt this man could be used elsewhere, but not in a rifle [company]...One poorly conditioned reinforcement can ruin a good section.⁹⁷

Given that many of the infantrymen in the Canadian Army had been training and conditioning themselves for the hardships of ground combat since 1940, it is understandable why many reinforcements, either fresh recruits from Canada or soldiers reallocated from other branches, could have a hard time keeping up. But it was still a persistent difficulty in the minds of many officers.

More troubling, though, were the shortcomings of replacement soldiers in the

94 Battle Experience Questionnaire, A/Captain Yuile, LAC RG 24, Vol. 10450, 30.

95 Battle Experience Questionnaire, A/Major A.H.M. Carmichael, LAC RG 24, Vol. 10450, 86.

96 Battle Experience Questionnaire, Captain Gordon A. Crutcher, LAC RG 24, Vol. 10450, 207.

97 Battle Experience Questionnaire, Captain W. Parker, LAC RG 24, Vol. 10450, 17.

areas of weapons use and motivation to fight. Captain Pariseault, fighting in Italy with Le Royal 22e Régiment, bitterly claimed that some reinforcements, “were ill-trained and I saw in Italy men who had never thrown a live grenade or fired a Tommy gun.”⁹⁸ The Calgary Highlanders' Major Harrison likewise noted that, “Many tradesmen were being used as straight riflemen [reinforcements]...in many cases they knew very little or nothing about the PIAT and the Bren.”⁹⁹ Major Carmichael added to his comments on replacement soldiers that, “[reinforcements] were unfamiliar with the PIAT, inexpert with the Bren, in many cases afraid of grenades...In my opinion, unnecessary casualties were caused by their unfamiliarity with [infantry] weapons.”¹⁰⁰ It is, however, Major Jock McLeod's comments that are the most penetrating: “Reinforcements coming into battle, at first do not seem to realize that before one side can win there must be a fight. They never seem to be ready to start that fight.”¹⁰¹

Reinforcement soldiers were not uniformly of poor quality, though as the Second World War ground on and Canada's manpower crisis worsened, their quality did seem to take a noticeable downturn. Officers clearly saw reinforcements as one of the weak links of the Canadian Army, though they remained a necessary link and a valuable one. For a unit reduced by combat losses, few things could raise morale like receiving timely reinforcement drafts, even ones consisting of inefficient soldiers.¹⁰²

At the same time, one can see in these comments some of what S.L.A. Marshall was alluding to in his comments on the “ratio of fire”: difficulties with weapons use, poor training, and at least one report of reinforcements being entirely unwilling to fight.

98 Battle Experience Questionnaire, Captain M. Pariseault, LAC RG 24, Vol. 10450, 18.

99 Battle Experience Questionnaire, A/Major Harrison, LAC RG 24, Vol. 10450, 191.

100 Battle Experience Questionnaire, A/Major A.H.M. Carmichael, LAC RG 24, Vol. 10450, 86.

101 Battle Experience Questionnaire, A/Major Jock McLeod, LAC RG 24, Vol. 10450, 128.

102 Battle Experience Questionnaire, Captain W. Parker, LAC RG 24, Vol. 10450, 17.

While such comments cannot be said to be universal even of reinforcements, as the data on their perceived effectiveness firmly suggests otherwise, there are still hints that the “ratio of fire” numbers might be applicable to at least some of the “green” reinforcements being fed into the Canadian Army to replace combat losses. On the other hand, there is also data from other sources – such as Stouffer's *The American Soldier* survey data from the Second World War – to support the idea that replacement soldiers were *more* likely to fire excessively.¹⁰³ More information would be required before anything more than speculation could be done on the “ratio of fire” of replacement soldiers, though it is interesting to note the circumstances under which Marshall's data may retain some validity.

The important point to draw from the example of the replacement soldiers is that the Canadian officers were very conscious of what *did* cause ineffectiveness in the ranks of their troops. Difficulties with physical condition, weapons use, and unwillingness to engage in the fight, all of which are important aspects of combat effectiveness, were clearly noted by officers when they occurred in soldiers under their command. Marshall has greatly underestimated the awareness in officers of the conduct of their men in generalizing his findings from the U.S. Army. When appraised on the basis of what Canadian officers were perceiving as tactical and social difficulties within their units, Marshall's theory – that officers were universally ignorant of tactical details on a level necessary to identify the “ratio of fire” as a problem – becomes completely untenable. Had officers truly been unwilling or unable to notice these problems, it is unlikely that

103 Stouffer, *The American Soldier Vol. 2*, 282-284. *The American Soldier Volume 2* contains an entire chapter's worth of survey data on replacement soldiers and reinforcements, and their integration into regular units. While this data was obtained from American soldiers, it is far more comprehensive than the relatively small amount of data on replacement soldiers from the Canadian Battle Experience Questionnaires.

they would have taken special note of the relatively inadequate combat efficiency of replacement soldiers. That they did take note of reinforcements' generally moderate-to-low efficiency should make any reader of Marshall's curious as to why they were only able to note the low efficiency of “green” reinforcements, but not the inefficient “ratio of fire” of any other troops. The only answer that makes real sense is that Marshall's observations on fire ratios in the Second World War are inapplicable to Canadian soldiers.

Conclusion

The phenomenon of “too much fire” is really a corollary to the effectiveness of the weapons being used, because as we have seen, Canadian soldiers relied heavily upon infantry firepower in battle. The use of fire was written into doctrine, and as the officers' surveys have indicated, it was put into practice on the battlefield as well. With fire and movement tactics dominating any offensive action, and with patrols being sent out carrying, and being supported by, heavy infantry weapons, the ability to generate large volumes of deadly fire was in many ways the epitome of what the officers considered would make weapons “outstandingly effective.” This heavy reliance upon small arms firepower placed the onus on the infantry to carry the fight forward. When the efficiency of this system was reduced, such as by defective weapons or by unenthusiastic reinforcement soldiers, the officers seemed very inclined to make note of it in their surveys.

Ineffective soldiers, however, seemed to be the exception rather than the rule. The overwhelming indication from the Battle Experience Questionnaires is that the Canadian officers being surveyed were satisfied with the combat effectiveness of their

infantry units. Small arms were by and large seen as at least “adequate,” and there is far more evidence to support a theory of Canadian soldiers firing their weapons to excess rather than not enough. When it was otherwise – such as with gun-shy reinforcements – respondents tended to make clear note of it in their surveys. With this evidence, Marshall's “ratio of fire” theories become increasingly unable to be generalized. There does not seem to be a good reason for officers to be so selectively observant of their soldiers, and what they did observe supports the idea that there was no crisis caused by Canadian troops failing to fire their weapons. It would be going too far to claim that S.L.A. Marshall was wrong on the basis of this evidence, but one can state with some certainty that based upon the Battle Experience Questionnaires, Marshall was incorrect in attempting to generalize his statements on the “ratio of fire.”

Chapter Six – Conclusion

This present study represents, to the best available knowledge, one of the first occasions upon which new evidence has been brought to light concerning S.L.A. Marshall's "ratio of fire" theories. Although the veracity and accuracy of Marshall's numbers has been disputed for years, there has been little work done to check his observations against the documentary evidence. Such an approach is clearly overdue; the historiography has become top-heavy with personal attacks upon Marshall, and has seen few attempts at verifying or disproving the man's claims using primary evidence. It is possible that there are very few surviving records from the Second World War that would actually be useful in this regard. The Canadian Army's Battle Experience Questionnaires, however, are one such source that can be used to test the accuracy of Marshall's "ratio of fire" work.

While Marshall's advocates and supporters might be tempted to dismiss the findings of the Battle Experience Questionnaires out of hand, on the basis that they were written exclusively by officers, such a position is unrealistic given the realities of the war. To claim that all junior and mid-level officers were ignorant of their soldiers' actions and performance in combat is to hold an untenable position. Not every officer who filled out a survey, of course, could have qualified as a good and effective leader, or a keen observer of soldiers' behaviour. On the other hand, to postulate that none of the 160 infantry officers who participated in the survey were able to observe fundamental tactical shortcomings in the troops assigned to them is to do these officers a grave historical disservice. Making such a claim necessarily implies dysfunctionality on the tactical level, something that historians should treat with skepticism, particularly when dealing

with an institution as successful as the Canadian Army of the Second World War. The issue of just how aware of their troops infantry officers were during the war is an intriguing one, and merits further study. However, other research done on the Canadian Army, such as Copp's *Fields of Fire* and *Cinderella Army*, have indicated no massive, systemic failures on the part of junior officers; Copp's work has shown that, at worst, high casualties rates among officers make *any* generalizations about the combat effectiveness of its officers impossible.¹ It would be imprudent to operate on the assumption that Canadian officers were criminally ignorant of their men without substantial research to back such accusations up with. The burden would fall upon S.L.A. Marshall's supporters to prove as correct and accurate Marshall's belief in the universal ignorance of junior and senior officers in combat. Until such extraordinary evidence comes to light, it is fair to operate on the belief that, while not every Canadian officer could have been an effective leader, a good many would have been observant enough to take note of something as significant as Marshall's "ratio of fire."

As the Battle Experience Questionnaires have indicated, Canadian infantry officers had plentiful opportunities to observe their soldiers in action, particularly given how the infantry bore the brunt of the ground fighting during the Second World War. Junior officers accompanied their units into battle, frequently leading from the front on patrols and attacks. They took note of the minutiae of tactical combat, from complaints over faulty weapons and combat section effectiveness to thoughts on the soldiering abilities of replacement soldiers. These observations found reflection in the comments left in their own handwriting in the Battle Experience Questionnaires. Given that many,

¹ Terry Copp, *Cinderella Army: The Canadians in Northwest Europe, 1944-1945*, (Toronto: University of Toronto Press, 2007), 264.

perhaps most, of the officers being surveyed were out of the lines due to injuries and were either facing extended rehabilitation or repatriation back to Canada, they were remarkably forthcoming about the tactical problems they had faced in the field. This may have been a function of their belief that, now standing outside of the institution and being solicited for their opinions, they could be at a greater liberty in critiquing the problems of establishment. One can also speculate that it was a desire to see many of these problems corrected, as well as good tactical behaviour encouraged, that led so many of the officers to include such substantial addendum notes to their answers.

What do the Canadian Battle Experience Questionnaires tell us? The data gathered from the surveys strongly indicates that officers' concerns over soldiers not firing their weapons were such a minority concern that they are essentially of negligible importance. In fact, it was found that not a single officer explicitly complained about low "fire ratios," or anything of the sort, to be a difficulty. The closest that the surveys came to indicating that a low percentage of soldiers were firing their weapons was when one – and only one – officer indicated "indifferent marksmanship" as a difficulty he had encountered with rifle fire, or when officers were remarking on the ineffectiveness of "retrained" replacement soldiers. Instead of non-firing being a problem, the surveys reflected, to a much greater degree, the officers' anxieties over excessive, undisciplined fire being applied indiscriminately. The phenomenon of "too much" fire was commented on far more frequently than that of "not enough." Other prominent difficulties included the effects on soldiers' morale of various German weapons, the faulty weaponry that plagued the Canadian Army, and of course qualitative troubles that sometimes beset reinforcement troops. It cannot be disputed that many officers were paying close tactical

attention to their men, given the concerns they repeatedly voiced in the questionnaires. That none of them expressed concern over fire ratios, and that many instead made note of exactly the opposite phenomenon, is very telling in light of S.L.A. Marshall's postulations on fire ratios.

It will not do to say that S.L.A. Marshall was wrong in his central assertions. Marshall was specifically writing about the United States Army during the Second World War; to the best available knowledge he never conducted any interviews with British or Canadian troops, nor were his observations aimed at them. At the same time, however, in *Men Against Fire* Marshall inferred universality for his “ratio of fire” numbers. He clearly believed that his data applied, more or less consistently, to every army in the field at the time of his interviews, and nowhere did he state that this non-firing phenomenon was restricted to American soldiers. Given his great esteem for the U.S. fighting man, one can assume that Marshall would have been upset by the implication that the soldiers of any other nationality were routinely more effective in battle than those of his own.

What has been found in the Canadian Army's Battle Experience Questionnaires is the fact that S.L.A. Marshall's belief in the universality of his “ratio of fire” numbers was incorrect. There is no evidence whatsoever that they applied to Canadian soldiers fighting in the Second World War, and considerable evidence that they did not. Non-firing did not rank as a serious concern to Canadian officers. It did not receive even the barest of mentions, nor, after a very thorough investigation of the survey documents, can one find even the slimmest of implications that only 15 to 20 percent of Canadian soldiers ever fired their weapons. Taking both the question data and the officers' extensive notes themselves as evidence, the historian is left with the firm conclusion that

this was simply not a phenomenon that existed among Canadian troops. While Marshall's advocates might stipulate that it existed but went unobserved or undocumented by the officers, the historical record and common sense lay such notions to rest quickly. Canadian officers were frequently in positions that would have allowed them to observe any low fire ratios, and furthermore, they had the opportunity to lodge their complaints and contribute their personal tactical knowledge to the war effort in the form of the questionnaires. Extraordinary evidence would indeed be needed to make the case that officers were completely oblivious to the actions of their men. Therefore, one is forced to conclude, on the basis of the Battle Experience Questionnaires, that S.L.A. Marshall's observations on combat are, for whatever reason, inapplicable to the Canadian experience of the Second World War. A low "ratio of fire" among infantrymen did not characterize combat for the Canadian Army.

It would be fallacious to claim that these findings invalidate all of Marshall's theories on the "ratio of fire." As mentioned, Marshall was speaking primarily of the U.S. Army and was merely universalizing his findings from there. While the Battle Experience Questionnaires clearly show that his work is not applicable to Canada, it would require a similar (and no doubt much broader in scope) examination of American documentary sources to definitively prove that Marshall's findings did not apply to U.S. soldiers either. In the absence of the thorough examination of analogous American sources, the conclusions of this particular study must necessarily be limited to the experience of Canadians during the war.

However, while definitive proof along these lines has yet to emerge from the United States, a few tentative observations can be made on the basis of this study's

findings. First, if one takes Marshall's argument as valid and accurate for American soldiers, there now exists the uneasy implication that while only 15 to 20 percent of U.S. front-line infantrymen were making any use of their weapons, a much higher percentage of Canadian soldiers (empirically undefinable, but likely a great majority – anything else would have surely been noticed by the officers) were doing so. Such an imbalance would necessarily imply the marked superiority of Canadian military training, equipment, tactics, and leadership over their American allies. If American soldiers were only able, at the best of times, to generate a fraction of the infantry firepower that their Canadian counterparts were, then it would follow that the combat effectiveness of the U.S. Army would have been significantly less than that of the Canadian Army in the same theatres of operation.

In truth, this reasoning is unsustainable, as it cannot be seriously argued that Canadian soldiers of the Second World War were exponentially more effective as fighters than those fighting beneath American colours. The Canadian Army did well for itself during that war, and rightly prides itself on its achievements. Whether it did “better,” qualitatively or quantitatively, than the Americans is an analytical dead-end. But as has been pointed out, there were no significant disparities. Canadians and Americans generally used the same equipment, similar tactics and training, and fought under a normally unified command. In every major theatre of operations in Europe from Sicily to Germany, Canadians and Americans were fighting near one another, if not exactly side-by-side. Culturally and socially speaking, Canadian and American troops during the Second World War had much more in common than even the Canadian and British soldiers. But there has never been any historical evidence to indicate that Canadian

soldiers performed exponentially better than their American counterparts in battle. While qualitative differences, and perhaps even some quantitative ones, can surely be identified, we have no reason to believe that the United States' soldiers fought so much more poorly than Canada's, as Marshall's statistics now imply.

One cannot help but wonder, then, about the veracity and soundness of Marshall's conclusions for the U.S. Army as well. If they were indeed true for American soldiers alone, then an explanation needs to be developed for why the American military was roughly as effective as that of Canada's in battle – a proposition made very difficult considering the primacy of infantry combat during the Second World War. Obviously the historian cannot say anything utterly conclusive about Marshall's evidence as it pertains to the U.S. Army, at least not without considerable primary-source research to back it up. But the implications of this present study are equally obvious. Marshall's “ratio of fire” numbers did not apply to the Canadian experience of war. And, as a corollary assertion, were his conclusions to still apply to the American experience of war, there would still be questions to answer as regards comparative combat effectiveness between the two armies.

Perhaps it is time, then, for military historians to move beyond S.L.A. Marshall's “ratio of fire,” a move that has yet to be made in the historiography due to the pervasiveness of Marshall's observations, and the ease with which they supposedly allow the historian “access” to aspects of human behaviour in war. Taking as a truism Marshall's belief that hardly any soldiers fired their weapons in combat, various scholars have tried to use this information to craft arguments about human nature, social conditioning, and military training. It is an appealing academic shortcut: a simple

proposition (that most soldiers will not or cannot fire their weapons in battle), backed up by hard data and numbers (Marshall's famous "15 to 20 percent"), which seemingly provides insight into what is going on beneath the tactical fog of war, something that is classically difficult for historians to grapple with. However, the evidence uncovered by this present study strongly suggests that Marshall's "ratio of fire" data is at minimum unreliable, and cannot be universalized as any sort of "natural law" of combat. S.L.A. Marshall authored many fine works, and his pioneering journalistic inquiry into the nature of combat has left modern historians with excellent records of the Second World War. His contribution to the field should not be underestimated or minimized, and it has not been the objective of this study to add to the weight of personal attacks that have been leveled against Marshall in recent years. Whether he deliberately lied or or was simply incorrect in some of his observations will likely never be known, and is an ultimately fruitless line of inquiry. All that can be definitively stated is that Marshall's claims about the "ratio of fire" are inconsistent with the documentary evidence gathered from Canada's experiences of the Second World War. Any pretense to universality that Marshall (or his supporters and intellectual heirs) claimed for his "ratio of fire" numbers is now demonstrably false, at least in the case of Canada. Either Canadian soldiers were the outlying anomaly in the Second World War, which is doubtful if not impossible, or else Marshall's numbers need to be treated with a more general skepticism by the scholarly community, rather than the uncritical reception they have received in the past.

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APPENDIX “A”
Battle Experience Questionnaires

BATTLE EXPERIENCE QUESTIONNAIRE 'A' – GENERAL

Note – This questionnaire is intended to ensure that the best use is made of your practical experience in the field during the present war.

(a) Please be quite frank. Your replies will be treated as confidential.

(b) Except where you are specifically asked for an opinion, please base your replies only on *what you personally have done or seen in your unit*. Do not include anything which you have merely been told by others.

(c) Please answer every question. If you have no information on any particular question insert the letters N.K. (Not Known.) Do not leave it unanswered.

(d) If you have opinions and/or experiences of value which are not covered by the questionnaire, please attach them to the questionnaire on separate sheets. It will be helpful if you give as much factual evidence as possible.

Name _____ Present Rank _____ Personal No. _____

Age Last Birthday _____

Regular, T.A. or Temp. Commission _____ Arm _____ Unit _____

Theatre(s) of War in which your Experience has been gained (with Dates):

<i>Theatre</i>	<i>Dates</i>		<i>Rank</i>	<i>Job in Unit</i>	<i>Unit if different from above</i>
	<i>From</i>	<i>To</i>			

Actual Operations on which your information is based (with Dates):

1. (a) Please complete the following table in respect of the enemy weapons which have been used against your unit.

In Col. (2) insert an estimate of the number of times the weapon in Col. (1) has been used against your unit.

In Col. (3) insert the figure “1” against the weapon which in your view had the greatest adverse effect on the morale of your unit, the figure “2” against the weapon which had the next greatest adverse effect on the morale of your unit, and the figure “3” against the weapon which had the next greatest adverse effect on morale.

<i>Serial No.</i>	<i>Weapon.</i>	<i>Used Against You</i>	<i>Greatest Moral Effect</i>	<i>Serial No.</i>	<i>Weapon.</i>	<i>Used Against You</i>	<i>Greatest Moral Effect</i>
	(1)	(2)	(3)		(1)	(2)	(3)
1	Rifles			10	Land Mines		
2	Sub-Machine Guns			11	Booby Traps		
3	Machine Guns			12	Tanks		
4	Mortars			13	Armoured Cars		
5	A/T Guns			14	Dive Bombers		
6	Other Artillery			15	High Level Bombers		
7	Bayonets			16	Aerial Machine Guns		
8	Grenades			17	Aerial Cannons		
9	Flame Throwers						

(b) Please give your view of the main reason for the adverse moral effectiveness of the weapons you have marked in Col. (3).

(1) Weapon with greatest adverse moral effect, ie. _____ effective because

(2) Weapon with next greatest adverse moral effect, ie. _____ effective because

(3) Weapon with next greatest adverse moral effect, ie. _____ effective because

2. (a) List any weapon whose effect upon morale in your unit appeared to *decrease* with experience _____

(b) List any weapons whose effect upon morale in your unit appeared to *increase* with experience

3. Please list in order of importance factors which, in your unit, appeared to have the effect of raising morale _____

4. Please list in order of importance factors which, in your unit, appeared to have the effect of lowering morale _____

SIGNATURE _____ RANK _____ DATE _____

PRESENT ADDRESS

BATTLE EXPERIENCE QUESTIONNAIRE 'H' – INFANTRY

Name _____ Present Rank _____ Personal No. _____

Unit Served With _____

1. Underline the weapon which your unit has actually used in action (add any not listed):

Grenade	Rifle Sub-machine Gun Bren Gun Pistol 20 mm. Gun _____ _____ _____	Med. Machine Gun A/T Rifle 2-in. Mortar 3-in. Mortar Twin A.A. M.G.s _____ _____ _____	Sticky 36 Grenade 69 Grenade 68 Grenade Bayonet 2-pdr. 6-pdr. P.I.A.T.
---------	---	---	---

2. Have you found any of these weapons outstandingly effective? If so, which and why?

<i>Weapon</i>	<i>Chief Reason(s) for Effectiveness</i>
(1)	(2)
1.	
2.	
3.	
4.	
5.	

3. Have you found any of these weapons ineffective? If so, which and why?

<i>Weapon</i>	<i>Chief Reason(s) for Ineffectiveness</i>
(1)	(2)
1.	
2.	
3.	
4.	
5.	

4. (a) Has your unit ever undertaken mine clearance? _____ If so (b) What equipment was used? _____
 (c) Was smoke used for clearance? _____ (d) Was night used for clearance? _____ (e) If you have experience of both, which do you prefer? _____ (f) Have you had experience of operating in an area containing anti-personnel mines? _____ (g) If so were they actuated by trip wire, pressure, or both? _____ (h) Based on your experience, what percentage of casualties may be expected in crossing an anti-personnel minefield? _____

5. (a) Has your unit undertaken mine-laying? _____ If so (b) What types of mines were laid? _____

(c) How were mines marked? _____

(d) How were mines recorded? _____

(e) Did you have R.E. Assistance? _____ (f) Do you regard R.E. Assistance as necessary? If so, why? _____

(g) When moving forward, did you clear your own mines? _____

6. (a) Did your unit take part in Night Operations? _____ If so (b) Were they specially trained for Night Operations? _____ (c) What methods did you use for keeping direction? _____

(d) Were these effective? _____ If not, why not? _____

(e) What distances did you cover? _____

7. (a) Did you ever receive Direct Air Support? _____ If so (b) How were targets indicated to Air? _____

(c) Was the support effective? _____ If not, why not? _____

8. (a) Did you ever have to organise rapid defence against counter-attack? _____ If so (b) What equipment and gear were used? (e.g. Wire, sandbags, mines, etc.) _____

(c) Did the R.E. bring it forward? _____ (d) What necessary equipment and gear were not available? _____

9. (a) What methods did you use for indicating objectives and targets in battle? _____

(b) What signals (whistles, etc.) did you use in battle? Were they effective? If not, why not? _____

(c) Have you ever used coloured smoke? _____ (d) If so, for what? _____

(e) Was it effective? If not why not? _____

(f) Have you ever used coloured flares? _____ If so (g) For what purpose? _____

(h) Were they effective? If not, why not? _____

10. (a) Did your section go into battle under W.E. strength? _____ If so (b) What was the average number of O.R.s in the section? _____ (c) Please list, in order of importance, the cause of wastage _____

(d) In your view, did your sections at the strength given under (b) prove adequate for close quarters fighting? _____

(e) At this strength, did they prove adequate for carrying sufficient ammunition for platoon weapons into battle? _____

(f) From where did you get casualty replacements? _____

Was their general standard of efficiency high, moderate or low? _____

(g) Did you detach "Left out of Battle" personnel before going into action? _____

11. Were you able to put the tactical principles of fire and movement, taught as battle drill before going overseas, into practice? _____ Often, fairly often, or seldom? _____

12. (a) Did your unit carry out an attack under an artillery barrage? _____ (b) If so, did they have preliminary training? _____ (c) Did they keep up with the barrage effectively? If not, why not? _____

(d) Was the attack by day or by night? _____ (e) If by night, were any special aids used to help troops lean on the barrage? _____

(f) If so, give details _____

13. List the main tasks carried out by your Pioneer platoon in battle _____

14. (a) Was your unit ever short of ammunition in battle? _____ If so (b) Of what natures of ammunition and how frequently? _____

<i>Serial</i>	<i>Nature of Ammunition</i>	<i>Frequency of Shortage (Often, fairly often, or seldom)</i>
	(1)	(2)

(c) From where did you get ammunition replenishments when in action? _____

(d) Who brought the ammunition to this point? _____

(e) Who brought it forward to you? _____

(f) Did this system work efficiently? _____
If not, why not? _____

15. (a) Have you ever co-operated with Infantry Tanks? _____ If so (b) Did you move in front of, behind, or amongst the tanks? _____ (c) If either in front or behind, what distances were maintained behind you and the tanks? _____ yards. (d) If the tanks led, please estimate the time interval between the tanks and yourselves reaching the objective? _____ minutes. (e) Please estimate the time between your arrival at objective and releasing the tanks to forward rally _____ minutes.

16. With what wireless sets was your unit equipped? _____

17. Into what groups were stations netted? _____

18. Give details of any difficulties experienced when working two wireless sets in one vehicle _____

19. Give data as to any use made of:

(a) Remote control _____

(b) Re-broadcast _____

(c) Relay stations _____

20. What use respectively was made of: (a) R.T.? _____

(b) W.T.? _____

(c) Line? _____

21. Was assault cable used? _____ If so, how? _____

22. Are line-laying facilities adequate? _____ If not, state in what respect they are inadequate _____

23. Did you have any battery or charging troubles? _____ If so, give details _____

24. Was visual signalling used? _____ If so, how? _____

25. Is knowledge of semaphore considered to be desirable? _____

26. How were communications arranged with: (a) Artillery? _____

(b) Armour _____

(c) Air _____

27. Give details of any improvised methods of communication or signalling equipment _____

28. Have you any complaints about the nature or scale of issue of signalling equipment? _____
If so, give details _____

29. Have you any experience of jamming or deception by the enemy? If so give details _____

30. Any other remarks on communications, particularly as regards failures or outstanding success? _____

Note – Please attach, on accompanying separate sheets (a) any answers for which there is not sufficient room above, and (b) any notes on matters not covered by your answers to the questionnaire. Information is particularly required on:

(a) Detailed description of any night operation in which you have been engaged.

(b) Incidence of physical and mental fatigue under battle conditions.

(c) The best size and weapons for an infantry section.

(d) Details of any operation in which you have co-operated with infantry tanks.

(e) Details of use of smoke to cover an operation and how it was used (Arty, Mortars 4.2 in., 3 in. or 2 in., generator or 77 grenades).

(f) Details and comments on systems of patrolling in your Unit.

(g) Detailed account of any particular operation in which tactical lessons of outstanding importance emerged or in which any original ruse or new use of weapons proved successful.

APPENDIX “B”
Battle Experience Questionnaires
Selected Statistics

Battle Questionnaires – Selected Statistics

The following are statistics derived from answers given by Canadian officers on their Battle Experience Questionnaires. While not every question on the survey was compiled statistically, all of the questions that have been judged particularly relevant to this work have been reproduced here with the statistical breakdown of how officers answered the question.

Note that despite the instructions on the questionnaire, not every officer gave an answer to every question. Generally speaking, an officer who specifically wrote down “Not Known” or “N/K” to a question was categorized as “No Answer.” Those who did not answer a question at all and gave no comment were not included in that question's statistics.

Survey 'H' – Infantry

Question 1: “Underline the weapons which your unit has actually used in action.”

Weapon	# of surveys reported used in		Weapon	# of surveys reported used in
<i>Rifle</i>	153		<i>P.I.A.T.</i>	141
<i>Sub-machine Gun</i>	149		<i>No. 77 Grenade*</i>	57
<i>Bren Gun</i>	152		<i>No. 75 Grenade*</i>	26
<i>Pistol</i>	115		<i>Flame Thrower*</i>	24
<i>20mm Gun</i>	14		<i>Rifle Grenade*</i>	2
<i>Medium Machine Gun</i>	77		<i>Hawkins Grenade*</i>	2
<i>A/T Rifle</i>	5		<i>Anti-Personnel Mines*</i>	1
<i>2-inch Mortar</i>	139		<i>Anti-Tank Mines*</i>	5
<i>3-inch Mortar</i>	140		<i>No. 88 Grenade*</i>	1
<i>Twin AA Machine Guns</i>	2		<i>“Crocodiles”*</i>	1
<i>Sticky Grenade</i>	3		<i>Bangalore Torpedo*</i>	1
<i>No. 36 Grenade</i>	142		<i>Booby Traps*</i>	1
<i>No. 69 Grenade</i>	52		<i>U.S. .30 Carbine*</i>	1
<i>No. 68 Grenade</i>	16		<i>4.2-inch Mortar*</i>	3
<i>Bayonet</i>	81			
<i>2 pounder</i>	6			
<i>6 pounder</i>	125			

** indicates a write-in; all others were options provided on the questionnaire.*

Question 2: “Have you found any of these weapons outstandingly effective?”

Weapon	Surveys reporting “outstandingly effective”		Weapon	Surveys reporting “outstandingly effective”
Bren Gun	54		No. 88 Grenade	1
P.I.A.T.	74		Rifle Grenade	2
6-Pounder	15		No. 75 Grenade	1
No. 36 Grenade	33		Medium Machine Gun	13
No. 77 Grenade	24		No. 69 Grenade	1
2-inch Mortar	10		No. 68 Grenade	1
Sub-machine Gun**	17		Bayonet	1
3-inch Mortar	44		20mm Gun	1
Rifle	15		Flame Thrower	15
Browning Light Machine Gun	1			

** includes reports of both Sten and Thompson sub-machine guns.

Question 3: “Have you found any of these weapons ineffective?”

Weapon	Surveys reporting weapon “ineffective”		Weapon	Surveys reporting weapon “ineffective”
Sten Sub-machine Gun	45		Bren Gun	2
2-inch Mortar	17		Rifle	1
Bayonet	2		Sticky Grenade	2
Pistol	20		P.I.A.T.	3
No. 69 Grenade	11		No. 68 Grenade	1
6-Pounder	3		Flame Thrower	1
3-inch Mortar	1		20mm Gun	2

Question 6 (a): “Did your unit take part in Night Operations?”

<i>All Surveys</i>			<i>Officers in Mediterranean</i>			<i>Officers in Northwest Europe</i>		
Answer	Total	%	Answer	Total	%	Answer	Total	%
Yes	133	87.5 %	Yes	49	92.4%	Yes	84	84.9%
No	16	10.5 %	No	4	7.55%	No	12	12.1%
No Answer	3	1.97 %	No Answer	0	0	No Answer	3	3.0%

Question 6 (b): “Were they specially trained for Night Operations?”

<i>All Surveys</i>			<i>Officers in Mediterranean</i>			<i>Officers in Northwest Europe</i>		
Answer	Total	%	Answer	Total	%	Answer	Total	%
Yes	46	34.6 %	Yes	26	53.1%	Yes	20	23.8%
No	80	60.2 %	No	18	36.7%	No	62	73.8%
No Answer	7	5.3%	No Answer	5	10.2%	No Answer	2	2.4%

Question 6 (c): “Were [Night Operations] effective?”

<i>All Surveys</i>			<i>Officers in Mediterranean</i>			<i>Officers in Northwest Europe</i>		
Answer	Total	%	Answer	Total	%	Answer	Total	%
Yes	122	91.7 %	Yes	46	93.8%	Yes	76	90.5%
No	4	3.0%	No	1	2.0%	No	3	3.6%
No Answer	7	5.3%	No Answer	2	4.1%	No Answer	5	6.0%

Question 7 (a): “Did you ever receive Direct Air Support?”

<i>All Surveys</i>			<i>Officers in Mediterranean</i>			<i>Officers in Northwest Europe</i>		
Answer	Total	%	Answer	Total	%	Answer	Total	%
Yes	100	66.2 %	Yes	33	63.5%	Yes	67	67.7%
No	39	25.8 %	No	15	28.9%	No	24	24.2%
No Answer	12	8.0%	No Answer	4	7.7%	No Answer	8	8.1%

Question 7 (c): “Was the [Air Support] effective?”

<i>All Surveys</i>			<i>Officers in Mediterranean</i>			<i>Officers in Northwest Europe</i>		
Answer	Total	%	Answer	Total	%	Answer	Total	%
Yes	81	80.2 %	Yes	26	76.5%	Yes	55	82.1%
No	3	3.0%	No	1	2.9%	No	2	3.0%
Partially	16	15.8 %	Partially	7	20.6%	Partially	9	13.4%
No Answer	1	1.0%	No Answer	0	0	No Answer	1	1.5%

Question 10 (a): “Did your section ever go into battle under W.E. strength?”

<i>All Surveys</i>			<i>Officers in Mediterranean</i>			<i>Officers in Northwest Europe</i>		
Answer	Total	%	Answer	Total	%	Answer	Total	%
Yes	123	81.5 %	Yes	43	82.7%	Yes	80	80.8%
No	23	15.2 %	No	7	13.5%	No	16	16.2%
No Answer	5	3.3%	No Answer	2	3.9%	No Answer	3	3.0%

Question 10 (d): “Generally speaking, did your sections...prove adequate for close quarter fighting?”

<i>All Surveys</i>			<i>Officers in Mediterranean</i>			<i>Officers in Northwest Europe</i>		
Answer	Total	%	Answer	Total	%	Answer	Total	%
Yes	81	55.5 %	Yes	31	59.6%	Yes	50	53.2%
No	45	30.8 %	No	14	26.9%	No	31	33.0%
No Answer	20	13.7 %	No Answer	7	13.5%	No Answer	13	13.8%

Question 10 (f): “Was the general standard of efficiency [of casualty replacements] high, moderate, or low?”

<i>All Surveys</i>			<i>Officers in Mediterranean</i>			<i>Officers in Northwest Europe</i>		
Answer	Total	%	Answer	Total	%	Answer	Total	%
High	8	5.6%	High	4	8.2%	High	4	4.3%
Moderate	85	59.9 %	Moderate	32	65.3%	Moderate	53	57.0%
Low	38	26.8 %	Low	8	16.3%	Low	30	32.3%
No Answer	11	7.8%	No Answer	5	10.2%	No Answer	6	6.5%

Question 11: “Were you able to put the tactical principles of fire and movement, taught as battle drill before going overseas, into practice?”

<i>All Surveys</i>			<i>Officers in Mediterranean</i>			<i>Officers in Northwest Europe</i>		
Answer	Total	%	Answer	Total	%	Answer	Total	%
Yes	128	84.8 %	Yes	45	86.5%	Yes	83	83.8%
No	15	9.9%	No	5	9.6%	No	10	10.1%
No Answer	8	5.3%	No Answer	2	3.9%	No Answer	6	6.1%

Question 11: “[...If Yes,] Often, Fairly Often, or Seldom?”

<i>All Surveys</i>			<i>Officers in Mediterranean</i>			<i>Officers in Northwest Europe</i>		
Answer	Total	%	Answer	Total	%	Answer	Total	%
Often	34	26.6 %	Often	10	22.2%	Often	24	28.9%
Fairly Often	48	37.5 %	Fairly Often	18	40.0%	Fairly Often	30	36.1%
Seldom	46	35.9 %	Seldom	17	37.8%	Seldom	29	34.9%

Question 12 (a): “Did your unit carry out an attack under an artillery barrage?”

<i>All Surveys</i>			<i>Officers in Mediterranean</i>			<i>Officers in Northwest Europe</i>		
Answer	Total	%	Answer	Total	%	Answer	Total	%
Yes	115	80.4 %	Yes	42	85.7%	Yes	73	77.7%
No	19	13.3 %	No	3	6.1%	No	16	17.0%
Unknown	5	3.5%	Unknown	0	0	Unknown	5	5.3%
No Answer	4	2.8%	No Answer	4	8.2%	No Answer	0	0

Question 12 (b): “If so, did they have preliminary training?”

<i>All Surveys</i>			<i>Officers in Mediterranean</i>			<i>Officers in Northwest Europe</i>		
Answer	Total	%	Answer	Total	%	Answer	Total	%
Yes	58	49.6 %	Yes	21	48.8%	Yes	37	50.0%
No	54	46.2 %	No	21	48.8%	No	33	44.6%
Unknown	1	0.9%	Unknown	0	0	Unknown	1	1.4%
No Answer	4	3.4%	No Answer	1	2.3%	No Answer	3	4.1%

Question 12 (c): “Did they keep up with the barrage effectively?”

<i>All Surveys</i>			<i>Officers in Mediterranean</i>			<i>Officers in Northwest Europe</i>		
Answer	Total	%	Answer	Total	%	Answer	Total	%
Yes	87	75.0 %	Yes	29	67.4%	Yes	58	79.5%
No	21	18.1 %	No	10	23.3%	No	11	15.1%
No Answer	8	6.9%	No Answer	4	9.3%	No Answer	4	5.5%

Question 12 (d): “Was the attack by day or by night?”

<i>All Surveys</i>			<i>Officers in Mediterranean</i>			<i>Officers in Northwest Europe</i>		
Answer	Total	%	Answer	Total	%	Answer	Total	%
Day	60	51.7 %	Day	23	53.5%	Day	37	50.7%
Night	12	10.3 %	Night	4	9.3%	Night	8	11.0%
Both	32	27.6 %	Both	11	25.6%	Both	21	28.8%
No Answer	12	10.3 %	No Answer	5	11.6%	No Answer	7	9.6%

Question 15 (a): “Have you ever co-operated with Infantry Tanks?”

<i>All Surveys</i>			<i>Officers in Mediterranean</i>			<i>Officers in Northwest Europe</i>		
Answer	Total	%	Answer	Total	%	Answer	Total	%
Yes	114	79.2 %	Yes	38	77.6%	Yes	76	80.0%
No	26	18.1 %	No	10	20.4%	No	16	16.8%
No Answer	4	2.8%	No Answer	1	2.0%	No Answer	3	3.2%

Question 15 (b): “Did you move in front of, behind, or amongst the tanks?”

<i>All Surveys</i>			<i>Officers in Mediterranean</i>			<i>Officers in Northwest Europe</i>		
Answer	Total	%	Answer	Total	%	Answer	Total	%
In Front	49	41.5 %	In Front	15	38.5%	In Front	34	43.0%
Behind	14	11.9 %	Behind	4	10.3%	Behind	10	12.7%
Amongst	16	13.6 %	Amongst	2	5.1%	Amongst	14	17.7%
All	30	25.4 %	All	15	38.5%	All	15	19.0%
No Answer	9	7.6%	No Answer	3	7.7%	No Answer	6	7.6%