



NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

**THE PERFECT *STURM*:
INNOVATION AND THE ORIGINS OF BLITZKRIEG IN
WORLD WAR I**

by

John O'Kane

December 2006

Thesis Advisor:
Second Reader:

Kalev Sepp
Robert O'Connell

Approved for public release; distribution is unlimited

THIS PAGE INTENTIONALLY LEFT BLANK

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE December 2006	3. REPORT TYPE AND DATES COVERED Master's Thesis	
4. TITLE AND SUBTITLE: The Perfect <i>Sturm</i> : Innovation and the Origins of Blitzkrieg in World War I			5. FUNDING NUMBERS	
6. AUTHOR(S) John O'Kane, Capt, USAF			8. PERFORMING ORGANIZATION REPORT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A			11. SUPPLEMENTARY NOTES: The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.	
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited			12b. DISTRIBUTION CODE	
13. ABSTRACT (maximum 200 words) What are the origins of tactical innovation in large, bureaucratic, military systems? This study will provide a detailed analysis of how the German Army in World War One took advantage of innovative tactical methods developed by their junior and non-commissioned officers in the field. While many historians often look at the results of WWI from the perspective of the General officers and politicians (i.e., top-down), they often overlook the important roles played by creative junior officers in revolutionizing the manner in which the German Army fought. These innovations, when supported by senior leadership, led to massive operational and strategic gains for the German Army late in World War One. I will explore how the German Army successfully applied these tactical innovations at the Twelfth Battle of the Isonzo, a.k.a. The Battle of Caporetto in 1917. The result was a crushing Italian defeat. This success encouraged the German leadership to attempt similar offensives in 1918 on the Western Front in France. Initially successful, the offensives later stalled. However, the lessons of these attacks formed the basis for what would become universally known as the <i>Blitzkrieg</i>, or "lighting-war" tactics. These lessons continue to effect how modern militaries employ combined arms in maneuver warfare today. This case study will highlight the importance of "bottom-up" tactical innovation within today's U.S. military.				
14. SUBJECT TERMS World War I, Innovation, Transformation, Military Innovation, Organizational Innovation, Technological Innovation, Military History			15. NUMBER OF PAGES 105	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL	

THIS PAGE INTENTIONALLY LEFT BLANK

Approved for public release; distribution is unlimited

**THE PERFECT *STURM*:
INNOVATION AND THE ORIGINS OF BLITZKRIEG IN WORLD WAR I**

John F. O'Kane
Captain, United States Air Force
B.S., Naval Postgraduate School, 2006

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN DEFENSE ANALYSIS

from the

**NAVAL POSTGRADUATE SCHOOL
December 2006**

Author: John O'Kane

Approved by: Kalev Sepp
Thesis Advisor

Robert O'Connell
Second Reader

Gordon McCormick
Chairman, Department of Special Operations and Irregular
Warfare

THIS PAGE INTENTIONALLY LEFT BLANK

ABSTRACT

What are the origins of tactical innovation in large, bureaucratic, military systems? This study will provide a detailed analysis of how the German Army in World War One took advantage of innovative tactical methods developed by their junior and non-commissioned officers (NCO) in the field. While many historians often look at the results of WWI from the perspective of the General officers and politicians (i.e., top-down), they often overlook the important roles played by creative junior officers in revolutionizing the manner in which the German Army fought. These innovations, when supported by senior leadership, led to massive operational and strategic gains for the German Army late in World War One. Moreover, the study will explore how the German Army successfully applied these tactical innovations at the Twelfth Battle of the Isonzo, a.k.a. The Battle of Caporetto in 1917. The result was a crushing Italian defeat. This success encouraged the German leadership to attempt similar offensives in 1918 on the Western Front in France. Initially successful, the offensives later stalled. However, the lessons of these attacks formed the basis for what would become universally known as the *Blitzkrieg*, or “lightning-war” tactics. These lessons continue to effect how modern militaries employ combined arms in maneuver warfare today. This case study will highlight the importance of “bottom-up” tactical innovation within today’s U.S. military.

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
A.	SCOPE.....	1
B.	BACKGROUND	2
C.	PERSPECTIVE	4
II.	THE CALM BEFORE THE STORM.....	7
A.	NINETEENTH CENTURY WARFARE EXPOSED.....	7
B.	THE BOER WAR & RUSSO-JAPANESE WAR	9
C.	WARFARE IN 1914 & 1915	10
III.	THE BEST OFFENSE IS A BETTER DEFENSE	17
IV.	CENTRALIZED CONTROL & DECENTRALIZED EXECUTION.....	23
V.	THE ISONZO FRONT	29
A.	UNREDEEMED ITALY.....	29
B.	WAR ON THE “ISONZO FRONT” 1915.....	33
C.	THE END OF THE BEGINNING, 1916	43
VI.	THE SWEET SMELL OF VICTORY	49
A.	RUSSIA.....	49
B.	RUMANIA	50
C.	ISONZO FRONT, 1917	52
VII.	THE BATTLE OF CAPORETTO	57
A.	GERMANY ARRIVES	57
B.	THE WESTERN FRONT	62
VIII.	THE HARSH REALITIES OF MODERN WARFARE	65
IX.	CONCLUSION	71
	APPENDIX A.....	75
A.	PRONUNCIATION	75
B.	PLACE NAMES	76
	APPENDIX B.....	77
A.	MAPS.....	77
1.	Present Day Isonzo Valley:	77
2.	Isonzo Front 1915 – 1918:	78
3.	Disposition of Forces along the Isonzo 1915 – 1917:.....	79
4.	Movement of Württemberg Battalion October 24, 1917.....	80
	APPENDIX C.....	81
A.	THE BATTLEFIELD TODAY	81
	BIBLIOGRAPHY	85
	INITIAL DISTRIBUTION LIST	89

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF FIGURES

Figure 1.	Topographical depiction of the Isonzo Front – Isonzo River is marked by the red stars.....	5
Figure 2.	Hungarian soldiers posing in the trenches. Hungarian and Bosnian soldiers were known for preferring hand to hand combat (notice the battle maces in the picture).	14
Figure 3.	Habsburg Army forces along the rocky southern line of defense known as the “Carso” shortly after Italy entered the war in 1915. Early in the war soldiers were not yet equipped with protective gear, i.e., helmets and gas masks.	14
Figure 4.	Introduction of gas onto the battlefield required forces to protect not only their soldiers, but the animals used to supply them. BELOW: The Italians and Austrian both utilized dogs for supplying soldiers in the difficult mountain terrain along the Isonzo Front.	15
Figure 5.	Stormtroopers in the trenches. Notice how the uniform has changed from those early in the war. Helmets, boots, even the uniforms have been modified for the new style of warfare.....	21
Figure 6.	<i>Flammenwerfer</i> or “Flamethrower” assault on Italian positions by German-Habsburg forces in 1917.	22
Figure 7.	BELOW: “Stormtroopers Attack” an artist’s depiction. BOTTOM: Stormtroopers attack at The Battle of Caporetto (1917). Note: Mt. Nero (Krn) in the background of both.	22
Figure 8.	BELOW: German Stormtroopers sit at the base of Mt. Mrzli Vrh after the 1917 breakthrough. BOTTOM: Lt. Erwin Rommel, facing camera, with his Württemberg Mountain Battalion in October 1917...	27
Figure 9.	Upper Isonzo Valley from Mt. Batognica. Karfreit (Caporetto) is the town in the center of the valley in front of the lower ridge. Tolmino is directly left of the edge of this picture. Flitsch and Mt. Rombon are barely visible at the top of the picture. The mountain directly across the valley is Mt. Matajur, where Lt. Erwin Rommel won his first <i>Pour le Merite</i> , or “Blue Max.”	41
Figure 10.	Mt. Vršič and Mt. Vrata, in the distance, from Mt. Batognica in the foreground. Benito Mussolini first fought saw combat on the slopes of Mt. Vršič.	42
Figure 11.	Mt. Mrzli Vrh today from Tolmino.....	42
Figure 12.	Mt. Nero (Krn) from Batognica.....	42
Figure 13.	Austrian forces dug deep caverns, <i>kavernen</i> , into the mainly limestone geography throughout the Isonzo Valley. The limestone caverns provided adequate shelter from Italian heavy artillery and the effects of the alpine weather.....	46
Figure 14.	Alpine winter and Austrian troops in the trenches in 1916.....	46

Figure 15.	TOP: General Luigi Cadorna. BOTTOM: General Boroevič (seated center right) and staff.....	47
Figure 16.	“5,000 guns and 51 divisions.” The red dots on the map correspond to Italian artillery positions. The blue dots represent Austrian artillery positions.....	55
Figure 17.	After the 11 th Offensive Austrian soldiers were broken and their leadership believed they would not be able to withstand one more offensive by the Italians.	56
Figure 18.	German Stormtroopers training with the Maxim 08/15 light machine gun (with drum magazine and large barrel jacket).....	59
Figure 19.	Actual artillery bombardment on the morning of October 24, 1917. ...	61

ACKNOWLEDGMENTS

I would like to thank my thesis advisor, Professor Robert O'Connell, and my second reader, Professor Kalev Sepp, for their time and patience in helping me write this thesis. I would also like to thank Professor John Arquilla for helping develop the topic of this thesis, and Professor Gordon McCormick for supporting the topic, and research required. Thanks also goes to Mrs. Marjorie Berte for all her hard work meticulously editing each draft, turning chaos into order.

Most important, I would like to thank my newly-made friends in Slovenia, Austria, and Italy who opened their doors and hearts in order to support the researching and writing of this thesis. To Anna and Vasja Kovačič who served as my personal guides, provided me a base of operations for exploring the battlefield, a place to eat and sleep, logistical support, and a means of transportation – I am eternally grateful. To the World War I Museum of Kobarid, Slovenia and its entire dedicated staff, without their advice, friendly discussions, and wonderful exhibits this thesis would not have been possible. To the Austria State Archive in Vienna, opening their doors and records gave the glimpse into life in the Austrian and German armies that was sorely missing. And to the numerous other museum and ossuary staffs in Gorizia, Nova Gorizia, Vittorio Veneto, Treviso, Redipuglia, and Sveta Gora one more thanks for the friendly and warm service during numerous whirlwind visits to each of the beautiful locations.

Last, but by no means least, I would like to thank my beautiful wife Valentina. She was part-time translator and full-time recipient of all my random thoughts and ideas. Without her support and my wonderful family none of this would have been possible!

THIS PAGE INTENTIONALLY LEFT BLANK

Soči (To the Soča)

*...How beautiful you are, lucid daughter of the mountain,
so graceful in your natural beauty,
your diaphanous depths are not troubled by the tempests rage!
Yet, alas, you poor one,
Fearful tempests, terrible storms are threatening you.
From the warm south they will come
raging across your fertile plains.
Alas, not long away is that day.
Clear sky above you,
hail of bullets around you,
and rain of blood and stream of tears,
thunder and lightning.
Swords will cut here,
blood will run knee deep,
our blood will feed you,
enemy blood will spoil you! ...*

- SIMON GREGORČIČ (1844 – 1906) ¹
19th Century Slovenian Priest and Poet

¹ Simon Gregorčič, *Soči*, 1879, downloaded from http://www.camillopavan.it/bitka_pri_Kobaridu/Simon%20Gregorcic.htm. Many believe Gregorčič predicted the bloodshed of WWI in his stirring poem from 1879 about his beloved River Soča. This poem and the likeness of its author were often used in Austrian postcards and propaganda to motivate the soldiers to defend the homeland against the invading Italian armies.

THIS PAGE INTENTIONALLY LEFT BLANK

I. INTRODUCTION

*I asked about the break through and he had heard at the Brigade that the Austrians had broken through ... up toward Caporetto. "It's Germans that are attacking." The word Germans was something to be frightened of. We did not want to have anything to do with the Germans.*²

- Ernest Hemingway, *A Farewell to Arms*

A. SCOPE

Few in the United States military will contest that its bureaucratic structure does little to aid quick adaptation of innovative tactical ideas coming from the field. The services like to believe in the motto they preach, "Centralized control, and decentralized execution." With the growth of information technologies and capabilities, those at the highest levels of command now have the ability to intervene directly, and rapidly, in the decentralized executions of their subordinates. Such intervention is making it difficult for tactical commanders in the field to adapt to the quickly changing battlespace environments, without having to ask permission first from above.

Even with a highly educated officer and non-commissioned officer (NCO) corps, innovative ideas at the tactical level are often stifled. Why? Simply, it is the increased visibility of operations and the potential for interference by commanders at the operational and strategic levels of the decision making process. This is not entirely the fault of operational and strategic commanders. The technological advancements of the last two decades have brought the battlespace environment to commanders' fingertips. Thus giving them unprecedented control over those in the field and preventing innovative commanders from being just that, innovative. This is not the first time the rapid growth in technology and doctrine has outpaced the ability of militaries to adapt. One does not need to look far back into modern military history to find similar circumstances reflected across the changing the face of warfare.

² Ernest Hemingway, *A Farewell to Arms*, Scribner, 1929, 187.

B. BACKGROUND

The first decade of the Twenty-first Century is not in a unique period in military history. Advancements in technology played an important role in transforming modern warfare in the past. At no other time in recent history has technology changed warfare more so than it did during World War I (WWI). Advances in weaponry, communications, transportation, and tactics required military powers to adapt new tactics and strategies in order to fight in a “modern” industrial and technological world. During WWI most combatants struggled to adapt to the requirements of industrial warfare, leading to millions of casualties among the armies engaged. Germany, earlier than any other country engaged in combat in WWI, was able to adapt tactically to the demands of industrialized warfare. While it was too late in the war to bring overall victory to the Germans, it was not too late to revolutionize the tactics and strategy that followed.

The above quote from Ernest Hemingway’s *A Farewell to Arms* describes an attack that actually occurred in October 1917, during the height of combat in WWI. It took place on the “Italian Front” along the Isonzo River (Figure 1), in what is today Northeastern Italy and Western Slovenia. After eleven Italian offensives and more than two-and-a-half years of fighting, this would be the last, and the first, German Austro-Hungarian offensive along this front. By the time of the Twelfth Battle of the Isonzo, or The Battle of Caporetto, the German Army had fully integrated the innovative ideas of “mobile warfare” into their tactical, operational, and strategic level planning. Initially developed on the Western Front, these strategies were finally perfected in the much more open terrain of the Eastern Front. Included were many revolutionary tactics developed by junior officers (lieutenants, captains, and NCO’s) early-on in WWI and then fully integrated into German military training. The result was a crushing defeat of nearly the entire Italian Army. This victory closed one of the bloodiest campaigns of the entire war. The German and Austro-Hungarian Armies hoped to drive another Allied power from the war; its fourth since the war began. Ludendorff, convinced of the value of the new tactics, would try two great offensives in 1918 based on the same tactics used along the Isonzo. Initially, the offensives

achieved the same level of success, only to become bogged down when forces advanced beyond logistics and heavy artillery. Although Germany would win a majority of the battles, she would ultimately lose the war.

At the onset of WWI, warfare itself was on the verge of a drastic change. New technologies, tactics, and ideas were being developed on the run that would lead to revolutionary changes; the effects of which are still being felt today. Though ultimately the “losers” in WWI, the German military led the way in innovative tactical developments, eventually changing how modern armies fought in the 20th Century – both conventionally and unconventionally.

The last major conflicts on the continent served as models for “modern warfare” for the European powers in 1914 – the Wars of German Unification in the mid-19th Century, of which The Franco-Prussian War of 1870 was the last. From 1870 through the turn of the century, the Prussian/German model – warfare of annihilation – was becoming the preeminent focus of general staffs, in Europe and around the world. The French, badly defeated by the Prussian Army in 1870, began to focus on a strategy based on fixed defenses. Large fortified towns and cities were built-up, and others were enlarged, along the entire German, French, and Belgium borders to defend against future German invasions.

As WWI opened the Germans went to war behind the plans of Alfred Graf von Schlieffen. The “Schlieffen Plan,” as it is now known, was based on the belief that a rapid envelopment and annihilation of enemy forces would bring success and a quick end to the war, much the same as in 1870 against the French. The German forces learned quickly that such success would not be the result. Early in the war, the Germans utilized high powered rifles as the primary killing weapon of the infantry. They marched into combat in open order formations, with bayonets fixed, only to be mowed down by walls of heavy artillery and machinegun fire. New weapons were slow to be adopted into the German ranks. Machine guns were seen as an entirely defensive weapon

system. Hand-grenades, mortars, light artillery and flamethrowers were the sole responsibility of the engineers (known as “pioneers”) and artillerymen.

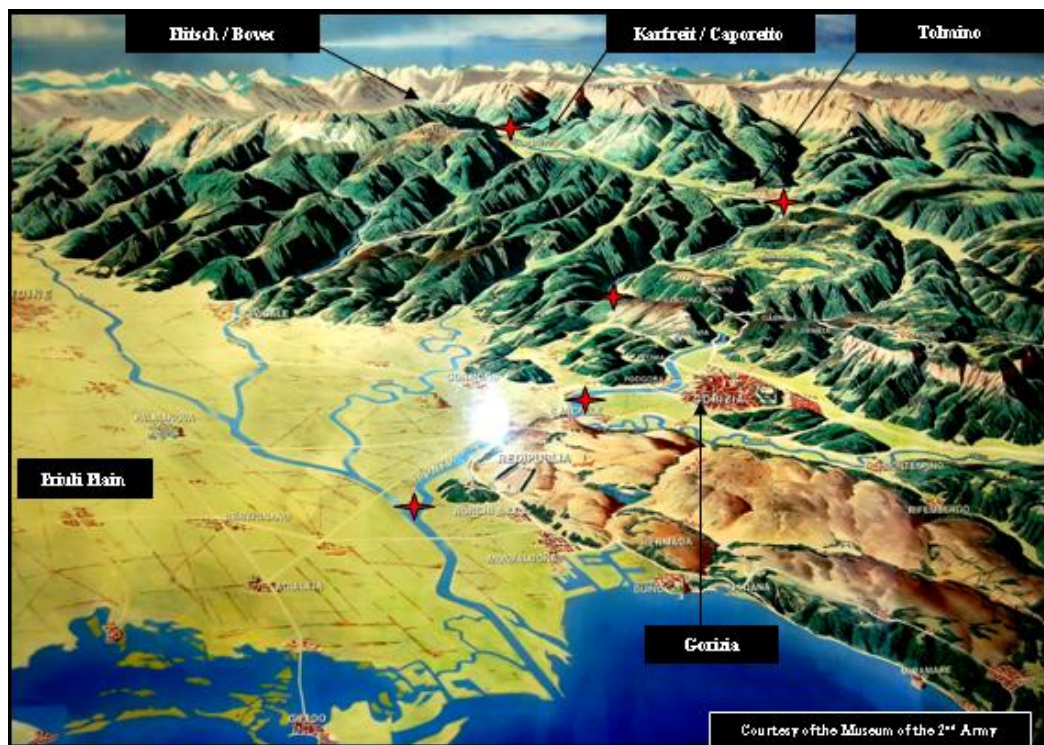
The failures to achieve victory through mobility in 1914 and early 1915 would lead to radical changes. Under a new chief of staff, General Erich von Falkenhayn, German tactics of warfare shifted from “annihilation” to the “attrition” of enemy forces and resources. Armies were no longer small, professional, and easily sustainable entities. To conduct war in the modern industrial age would require large armies and the full mobilization of the resources of the country, including its population. The industrialization of warfare came with technology that dramatically hastened the rate at which combatants would kill each other. Falkenhayn would use, squander really, these human and industrial resources to produce an epic slaughter on the Western Front – millions killed between lines that barely shifted through 1917. The combatants, Germany included, were being bled white, while accomplishing little of military utility. Something had to be done, a new style of war concocted.

C. PERSPECTIVE

The situation in 1914 was similar to the post-Cold War era. Warfare is undergoing a radical change, not only technologically, but also in the way it is being fought. The United States military is still struggling to adapt to major changes, like those currently being witnessed in Iraq and Afghanistan. In the last sixty-five years the United States has had to rely on a large military mainly out of necessity (Germans, Japanese, Soviets, etc.). Today’s military is a vestige of that necessity. Those the United States is fighting, or may have to fight in the future, will likely never stand toe-to-toe in open combat with the U.S. military. They will engage in insurgent warfare, as the Achilles heel is exposed daily by reports out of Iraq and Afghanistan. The questions have been asked, “Why don’t we learn from the lessons of Vietnam, the Soviets in Afghanistan, or the British in Malaya?” What WWI shows is that changing a military bureaucracy should come from within. When given a chance by senior leadership, those in the field can successfully adapt how they fight and win.

While many historians look at the results of WWI from the perspective of the General Officers and politicians, top-down, they frequently overlook the important roles played by creative junior and non-commissioned officers. Through a detailed study of the events leading up to and through the final campaign on the Isonzo, this study seeks to show how the German Army took advantage of innovative tactical ideas at its lowest command ranks and implemented them into a successful strategy of mobile warfare. Twenty years later these ideas would form the foundation for what would become the “lightning war” tactics of the classic German “Blitzkrieg.” In essence, this study will highlight the importance of tactical innovation at the lowest levels in modern warfare – a lesson certainly applicable today. In the end, the need for “bottom-up” tactical innovation within today’s U.S. military is critical; especially when many of its senior leaders appear as tradition-bound and centralized as those who commanded the armies that led the world into, and through, WWI.

Figure 1. Topographical depiction of the Isonzo Front – Isonzo River is marked by the red stars.



THIS PAGE INTENTIONALLY LEFT BLANK

II. THE CALM BEFORE THE STORM

*I said, "In the old days the Austrians were always whipped in the quadrilateral around Verona. They let them come down onto the plain [Friuli] and whipped them there." "Yes," said Gino. "But those were Frenchmen and you can work out military problems clearly when you are fighting in somebody else's country."*³

- Ernest Hemingway, *A Farewell to Arms*

A. NINETEENTH CENTURY WARFARE EXPOSED

Before WWI, none of the combatants about to face each other on the battlefield were able to predict the course of combat once the war commenced. The Industrial Revolution, during the first sixty years of the 19th Century, would introduce significant changes, but the speed of innovation was still relatively slow. Breech-loading rifled artillery, repeating magazine fed rifles, machine guns, and the railroad were all waiting in the wings. Significant increases in firepower, from essentially muzzle-loading small arms alone, had forced troops into the trenches during the latter stages of the American Civil War; particularly in the Richmond-Petersburg Campaign. Imagine for a moment, how different the outcome of the Civil War, and future wars that followed, would have been had early machine gun technology – in development at the time – been employed by both the Confederacy and the Union.

The Crimean War in 1856 began the transition into modern warfare. Nevertheless, the American Civil War was the first modern war. Most of the strategic technology employed in WWI was in use, or development, during the Civil War. Both Robert E. Lee and Ulysses S. Grant used railroads extensively to provide strategic mobility undreamed of in earlier conflicts. Communications between commanders no longer depended on the fastest horse and messenger any longer. The telegraph allowed a near real-time communication capability in the field. Massive artillery bombardments would precede all major advances in

³ Hemingway, 185.

order to soften up the enemy and cover advances. The idea of “total war” was not a new concept at the time of WWI and the German General Staff. The Union commanders understood that breaking the back of the South not only required destroying the fighting arm, but breaking the civilian will and logistical breadbasket as well. At the mid-point of the war the U.S. navy no longer resembled the navy that opened the war. Fleets of “ironclad” steam-powered gun boats had replaced the larger, more classic, wooden sailing ships of the line. The Confederacy, in order to break the naval blockade, even experimented with submarine warfare. Naval combat after the Civil War would never resemble what it had been imagined only five years earlier. An air component of the Civil War, balloons for artillery spotting, was witnessed as well during the Civil War, though it would still be a few decades before the third dimension of combat would be effectively added to the arsenals of world armies.

Getting back to the earlier point about the machine guns, a weapon destined to be the nemesis of infantrymen in WWI; a workable model pioneered by Gatling was available and could have been employed had it not been for the conservatism of the Unions procurement agents. It would soon migrate to Europe, but without any conception of how it could be best employed.

The French in 1870, and the British in 1898, had amassed machine guns in batteries like artillery but had found them peculiarly vulnerable to enemy artillery attack. The dilemma now became how to deploy machine guns in action. Previously, they had been used with inconclusive results, in part because there were so few of them.⁴ By the turn of the century, planners were still struggling to integrate these innovations into military doctrine. Douglas Haig, who participated in Kitchener’s expedition into the Sudan in 1898 lamented, “I trust for the sake of the British cavalry that more tactical knowledge exists in the higher ranks of the *average* regiment than we have displayed in this one.”⁵ Throughout the Egyptian campaign, Haig lamented the lack of machine guns in the ranks.

⁴ Hubert Johnson, *Breakthrough! Tactics, Technology, and the Search for Victory on the Western Front in WWI*, Presidio Press, 1994, 4.

⁵ Johnson, 6.

Even the Spanish-American War foreshadowed the lack of preparation for conducting modern technological war. In one of the most famous battles from that conflict, San Juan Hill, a dismounted cavalry unit faced a dug-in Spanish force. An uphill frontal assault was chosen as the method for taking the hill, this in the face of modern high-powered breech loading rifles. Due to the low morale of Spanish troops, the attack was eventually successful, but U.S. casualties were very heavy. Tactically, bypassing or outflanking San Juan Hill by maneuver and mobility would have resulted in fewer casualties, and possibly had the same strategic effect. This battle and the Spanish American War in general should have highlighted for U.S. military commanders the changing nature of warfare, and how under-prepared U.S. forces were. Unfortunately, the United States was as woefully unprepared for war in 1918 as the majority of other combatants of 1914.

B. THE BOER WAR & RUSSO-JAPANESE WAR

At the beginning of the 20th Century two conflicts demonstrated the brutal impact the Industrial Revolution had upon open warfare - The Boer War and the Russo-Japanese War. Advisors and staff from all major European powers witnessed the events of these conflicts and gained sobering insights into the future of “modern warfare” but curiously the lessons learned were quickly forgotten.

Count Sternberg, a former German officer who sought service with the Boers, claimed: “The modern rifles, with their immense range and rapidity of fire, and the smokeless powder, have completely upset old principles of tactics . . . in the wars of the past an energetic offensive had led to victory, in the wars of the future it will lead to destruction.”⁶ The Russo-Japanese War contained numerous examples of entrenchments being protected by machine guns. Both the Boer War and the Russo-Japanese War highlighted how ineffective the massed linear infantry attack had become. Alfred von Schlieffen remarked, “A complete change

⁶ Johnson, 6.

of tactics is necessary,” because it was no longer possible for two lines to advance against one another. Nor was it possible to use the deep columns so common to Napoleonic warfare.⁷

Boer lines of defense were well organized and strong. Friedrich von Bernhardi, a member of the German General Staff noted that English artillery had little effect on Boers hidden in trenches and behind other cover. British commander Lord Roberts only succeeded in defeating the Boers because he turned their trenches by flanking them. Turning the Boers out of their trenches required great effort and resulted in considerable casualties.⁸

The Russo-Japanese War was of a much larger scale than that of the Boer War. Foreign military observers typically accompanied the more successful Japanese force. It was noted in reports throughout the conflict that the Russians defended their positions well, but attacked poorly. Frontal assaults, with bayonets fixed, were consistently employed by both sides and led to large expenditures of infantry. An anonymous Russian observer, commenting on the aftermath of Japanese attacks at Port Arthur noted, “A thick, unbroken mass of corpses covered the cold earth like a coverlet.”⁹ Bernhardi again noted that, “In the future, extensive use of spade work will be made with the object of gaining cover against the greater effect of firearms.”¹⁰ Both conflicts closely resembled the warfare of 1914. Nevertheless, these wars were fought far from Europe, as was the American Civil War. On the continent, military planners allowed themselves the self-indulgent fantasy that European Armies, better trained and better equipped, would somehow negate the brutal logic of massive firepower.

C. WARFARE IN 1914 & 1915

First Lieutenant Erwin Rommel’s observations of the war in Belgium and Northern France in 1914 and 1915 ironically echo the reports of Bernhardi almost

⁷ Johnson, 6.

⁸ Ibid., 8.

⁹ Ibid., 9.

¹⁰ Ibid., 9-10.

fifteen years earlier, “The 3rd Battalion paid dearly for having established itself close to the southern edge of the woods. These units were not dug in properly. The heavy French artillery fire produced devastating results among the troops stationed in and on the edge of the woods.”¹¹ Lieutenant Rommel was one of the pioneering junior officers in the German Army during WWI. He was credited with developing techniques for his *Württemberg* Mountain Battalion, later in the war, similar to those of Assault Battalions being formed in all the German divisions (Assault Battalions will be discussed in detail later in this paper).

At the outbreak of war in 1914, the British, French, and German training manuals remained remarkably unchanged from those fifty years earlier. Given the reports of the R-J War by officers, oddly, even the British failed to strengthen infantry battalions with additional machine guns. British manuals stressed marksmanship and the “vigorous offensive.”¹² In the new modern warfare all arms had to work together. The French training manual stated, “Infantry depends upon artillery to enable it to obtain superiority of fire and close with the enemy.”¹³ The French manual also stressed the infantry attack as well; emphasizing deep columns behind advanced skirmishers. According to the manuals, French artillery would perform only two functions: 1) support the advance and 2) counterbattery fire. Moreover, supporting the advance always had priority over counterbattery work.

Before 1911, the Prussian Army was not noted for tactical innovation. Its General Staff was still immersed in analysis of the Franco-Prussian War. A majority of effort was spent trying to meld science, mathematics, and war in the hopes of coming up with a pseudo-formula for the execution of combat. The followers of Schlieffen, particularly the younger Moltke – the son of the hero of the German Wars of Unification – made progress in improving and modernizing

¹¹ Erwin Rommel, *Attacks*, First translated by U.S. Army Infantry School, 1939. Athena Press, Inc., 1979, 40.

¹² Johnson, 15.

¹³ *Ibid.*, 15.

tactics. The result was the formation of machine gun companies, and the issuance of tactical manuals for the machine gun in 1913 and 1914.

By 1914, aircraft, dirigibles, telegraphs, telephones, wireless telegraphy, automobiles, and armored vehicles were all added to the arsenals of most field armies. Initially, technical limitations were so great that many planners placed limited emphasis on them. This excuse cannot be used, however, by those who failed to take advantage of machine guns or rapid fire artillery. By the end of the Russo-Japanese and Boer Wars these weapons had already reached a high state of development.

The direction of warfare was being dictated by senior leaders, on their respective General Staffs, and not by the technology being developed. When the call to action came in 1914 men marched into combat poorly equipped for modern warfare (Figure 2 and 3) with bugles blaring, in linear formations, bayonets fixed, with pomp-and-circumstance resembling the flare of Napoleonic times. Bayonets still glistened in the sun as the troops marched in long formations towards the front. However, the bayonets were now attached to modern magazine fed rifles. Railroads brought men and supplies close to the front lines, but horses and mules were still required to get the supplies forward. The telegraph and telephone streamlined communications, but the lines were easily cut by man and/or artillery. The runner still played an important role in the heat of battle. Few realized that with the introduction of chemical weapons supply trains had now become vulnerable. Not only were soldiers soon to be the target of chemical attacks, but so too were the horse and mule columns that supplied the men with food and ammunition (Figure 4).

Barbed wire was another little noticed invention of 1914 combat that that changed how all ground combat would be fought thereafter. Even if an attacking force had every possible advantage, the defender only needed well laid barbed wire ahead of his position. The attack was almost guaranteed to grind to a halt. Now the attacker had to send men out to cut the wire, or blast a hole through it with artillery, and that served to alert the defending force to an upcoming assault.

If the wire wasn't cut, the attacking force would lose cohesion attempting to cross the wire barrier in the midst of battle – making them prime target for defensive machine guns, mortars, and artillery. These type of entrapments and entanglements were not new when WWI began. Typically, they consisted of pointed stakes or fences laboriously put up to protect defending forces. Barbed wire was a cheap, incredibly simple, and quickly constructed alternative to what had been used in the past and could be easily massed produced. Imagine trying to build a wood barricade from the English Channel to the Swiss-Franc border; there wouldn't be a tree left in Europe.

Tactically, officers still remained behind the advance so as to best maintain order and ensure the integrity of the line. Warfare remained a linear enterprise stressing offensive action – the key tool of that offensive power remained artillery. Yet artillery, especially artillery powered by high explosives, could also be used to stop an advance. This, when combined with machineguns, remained the conundrum upon which land assaults foundered. There were some attempts at technological adaptation. Some of the combat innovations that came to be standard issue for soldiers of early WWI were: 1) trench mortars, invented by the Germans; 2) steel helmets, also invented by the Germans but adapted in some form by most combatants by the end of the war; 3) hand grenades, Germans and widely adapted; 4) flame throwers, that's right, the Germans. Yet, until better tactics were developed, these mostly reinforced the defender. Still, it is notable that was the Germans who did most of the innovating.

Few countries did much to innovate like Germany and her allies after 1914. That is not to say that Germany was any more successful early on. Yet, by attempting to innovate earlier, Germany was at least ahead of her enemies in terms of having systems and methods in place. Few predicted how slowly most combatants would adapt, but at least Germany made a concerted effort. The efforts would soon begin to pay off at all levels of command. Within two years mobility would be restored to the Battlefields in the East. The successes on the Eastern Front would slowly begin to spread west.

Figure 2. Hungarian soldiers posing in the trenches. Hungarian and Bosnian soldiers were known for preferring hand to hand combat (notice the battle maces in the picture).



Figure 3. Habsburg Army forces along the rocky southern line of defense known as the "Carso" shortly after Italy entered the war in 1915. Early in the war soldiers were not yet equipped with protective gear, i.e., helmets and gas masks.



Figure 4. Introduction of gas onto the battlefield required forces to protect not only their soldiers, but the animals used to supply them. **BELOW:** The Italians and Austrian both utilized dogs for supplying soldiers in the difficult mountain terrain along the Isonzo Front.



THIS PAGE INTENTIONALLY LEFT BLANK

III. THE BEST OFFENSE IS A BETTER DEFENSE

*The nature of modern war is not a simple matter. It is subject to numerous modifications according to the character of the contending parties and the various theatres of war. . . . The fundamental principles of war certainly remain the same, wherever it is waged; but special conditions cause in each case special methods of employment of the fighting forces, and these latter, again, will frequently differ.*¹⁴

- Von Bernhardi, 1914

On the Western Front, from 1914 through 1916, offensive action in modern warfare, as espoused by Prussian Generals like Bismarck, Helmuth von Moltke the Elder, Alfred von Schlieffen, and Erich Ludendorff, were being checked at every point by strong defensive fortifications and modern technology. During this period, two separate and completely opposite schools of thought – annihilation vs. attrition – were debated among the highest ranks of the German General Staff. Both strategies would be tested early in WWI, but the attrition tactics would lead to what some would call “the most senseless episodes in a war not distinguished for sense anywhere.”¹⁵

Frustrated with the lack of success on the Western Front, by 1916, some commanders in the General Staff of the German Army began to take notice of certain innovative tactics coming from their young leaders in the trenches. Most commanders within the German Army gave junior officers the maximum possible discretion in the execution of their duties. In turn, junior officers relied heavily on their NCO's to accomplish the mission tasks. Instead of leading from behind, many officers and NCOs moved out front, leading their units not as linear formation but as individual components of the larger division. On the Western Front small groups of infantry would probe for weak spots in the line, abandoning

¹⁴ Michael Hennessy and B.J.C. McKercher, *War in the Twentieth Century*, Praeger Publishers, 2003, 1.

¹⁵ Robert Foley, *German Strategy and the Path to Verdun*, Cambridge University Press, 2005, 259.

the massed infantry attack. Such tactics required a certain kind of organization, and the German Army set about creating it. An army that could probe enemy defenses, infiltrate its weak points, and rapidly exploit breakthroughs with deep encircling moves, couldn't be an army that was centrally directed or dependent on detailed plans worked out in advance.¹⁶

The decentralization in German tactical execution allowed senior leaders to find new ways of approaching the stalemate on the Western Front and return the army to more mobile operational approaches. The junior officers did not disappoint. From their ranks came the ideas that lead to the development of new "Assault Battalions," and a highly selective program that trained the officers and NCOs within the service in the new *stosstruppen*, or "Stormtrooper" tactics to be used by the Assault Battalions. Training spread quickly through the German Army, and eventually to the Austro-Hungarian Army as well.

By 1915 the Germans were making effective use of their own combat troops to test new ideas and equipment, rather than specialized testing agencies. Assault Battalions formed due to initial efforts by engineers and infantry to solve the machine gun and field artillery problem. To Lieutenant Colonel Max Bauer, an expert in siege artillery and an influential officer on the German General Staff, the solution was found in advancing artillery alongside the initial infantry attacks.¹⁷ The Germans had recently developed lightweight (3.7cm) cannon that could fill such a purpose. Bauer proposed the formation of a special unit to test this strategy and other new weapons in combat, including flamethrowers, trench mortars, and light machine guns. Unfortunately, due to the pronounced muzzle flash of the "assault cannons," as they were called, it became a favorite target of French artillery. Subsequently, it became very unpopular with the new Assault Detachments who were fielding the cannons. In August of 1915, the future of the Assault Detachment would change forever with the replacement of its

¹⁶ James Wilson, *Bureaucracy*, Basic Books, Inc., 1998, 15.

¹⁷ Bruce Gudmundsson, *Stormtroop Tactics: Innovation in the German Army, 1914-1918*, Praeger Publishers, 1989, 46.

commander, one Major Calsow, with a decorated combat veteran of the Western Front – Captain Willy Martin Rohr.

In the months following Major Calsows' replacement Captain Rohr, with the aid of his commanding general, would transform his unit from an experimental pioneer unit into an elite infantry organization made up of a machine gun platoon, a trench mortar platoon, and a flamethrower platoon. The battalion was well on its way to becoming a team composed of different weapons, each with its particular virtues and vulnerabilities.¹⁸

Rohr replaced the “assault cannon” with captured Russian 76.2mm field guns, and rechristened them the 7.62cm “infantry gun.” Rohr experimented with various body armor combinations, but found they conflicted with the style of warfare he was developing – rapid movement and shock. The one piece of armor that was adopted for all operations was the *Stahlhelm*, the steel helmet that later became the trademark of the German soldier in both WWI and WWII. The personal equipment was further altered to reflect the type of combat that would be undertaken by the soldiers of the newly forming Assault Battalions.

The heavy leather “jackboots” long associated with the German infantry (knee-length boots with exposed metal tacks on the soles that made a distinctive sound when marching on solid surfaces) were replaced. Lighter and more durable lace-up leather boots used by the Austrian mountain battalions were chosen. The field uniform was reinforced with leather patches on the knees and elbows to facilitate crawling. Because the hand-grenade was now the weapon of choice for the individual stormtrooper, the leather belt and shoulder harness used to carry ammunition were replaced with an over-the-shoulder bag for carrying more grenades. Even the standard-issue 1898 Mauser carbine was replaced with a lighter version of the same weapon.

The tactical elements of the Rohr Assault Battalion relied on the replacement of skirmish line attacks with surprise assaults of squad-sized “stormtroopers.” The use of supporting arms (flamethrowers, indirect artillery,

¹⁸ Gudmundsson, 47.

field artillery, machine guns, and trench mortars), coordinated at the lowest leadership levels possible, facilitated the suppression of the enemy during the attack (Figure 5 & 6). Thus, lieutenants, captains, and NCO's would be in charge of the units on the offensive as opposed to the colonel's and generals behind the lines or at the headquarters. The new tactics facilitated the "rolling-up" of enemy trenches by troops armed mostly with nothing more than a rifle and hand grenades (Figure 7).¹⁹ These principle tactics would be tested, honed, and refined against the French in the Vosges Mountains through the end of 1915.

In 1916, General Falkenhayn (introduced in Chapter I) authorized the formation of Assault Battalions, initially for limited objectives in combat. Meanwhile, he had undertaken a campaign to, as he called it, "bleed the French white." This effort would test the existence of the Assault Battalion and further define the role it would play in future offensive operations – at Verdun.

While Verdun proved to be a bloodbath nearly as costly to the Germans as the French, it did serve to confirm what "state of the art" German officers already knew, that the key to successfully attacking a trench was close coordination of heavy weapons managed at the lowest possible levels of command, and excellence in close combat by squads capable of moving and fighting as independent units.²⁰ Training German infantrymen in Assault Battalion tactics became a priority. At Verdun the precursor of the tactics so effective later in 1917 and 1918 would be formed. Small infantry units equipped with the capability of providing their own combat support would bypass the strong points of the enemy line in order to attack deep behind the position; further allowing other strong points to be taken from the rear or flank.

Consequently, the plan to "bleed the French white" was also beginning to bleed the Germans in the West as well. At the same time, Russian forces in the East were very close to crushing the Austro-Hungarian forces facing them. After months of fighting, General Falkenhayn would be forced to send forces to the aid

¹⁹ Gudmundsson, 49.

²⁰ Ibid., 71.

of the Austro-Hungarian's in the East. Following the end of combat action at Verdun, German forces on the Western Front continued to maintain an entirely defensive posture. Focus thus shifted to the East and allowed the Assault Detachment further time to hone the skills for which they had already become quite accomplished.

Technological and tactical experimentation within the German Army during this period was plentiful. Many ideas failed. The tactics discussed above highlight the importance of just a few ideas and programs the Germans undertook to revolutionize battle strategies. As these innovations were brought to the battlefield, they played a role in transforming modern warfare. Assault training spread quickly, and by mid-1917 the German and Austro-Hungarian Armies had defeated the Russian, Rumanian, and Serbian field armies.

Figure 5. Stormtroopers in the trenches. Notice how the uniform has changed from those early in the war. Helmets, boots, even the uniforms have been modified for the new style of warfare.



Figure 6. *Flammenwerfer* or “Flamethrower” assault on Italian positions by German-Habsburg forces in 1917.



Figure 7. **BELOW:** “Stormtroopers Attack” an artist’s depiction. **BOTTOM:** Stormtroopers attack at The Battle of Caporetto (1917). Note: Mt. Nero (Krn) in the background of both.



IV. CENTRALIZED CONTROL & DECENTRALIZED EXECUTION

*Such tactics required a certain kind of organization, and the Germans set about creating it. An army that could probe enemy defenses, infiltrate deep points, and rapidly exploit breakthroughs with deep encircling moves couldn't be an army that was centrally directed or dependent on detailed plans worked out in advance. It had to be an army equipped and organized in such a way as to permit independent action by its smaller units.*²¹

- James Q. Wilson

*But it was the German army's decision in 1917 to introduce new "infiltration tactics" that provided a real tactical solution to the stalemate of trench warfare. These tactics called for a brief surprise artillery bombardment aimed at disrupting narrow weak points in the enemy line, followed by the quick penetration by small independent groups of storm troops who were to bypass points of strong resistance and advance as far as possible.*²²

- Keir A. Lieber

Even before Verdun, Captain Rohr was already utilizing the experiences of the Assault Battalion as the basis for further training of other Assault Detachments, holding training courses for other units. The first was held in December of 1915. The classes were open to officers and NCO's from within the division and soon spread to other divisions and eventually the entire army. Classes were kept small and taught the new method of fighting espoused by Rohr.

The typical column and skirmish line methods of advance were "untrained." Individual squads were now to be treated as independent entities. For Rohr, the objective of the attack required a separate unity of action. Training emphasized the importance of taking advantage of terrain in the movement across "no man's land" so that units were not required to remain in contact with each other. To further ensure effective training, large full-scale mockups of

²¹ James Q. Wilson, *Bureaucracy*, Basic Books, 1989, 15.

²² Keir A. Lieber, "Grasping the Technological Peace, The Offense-Defense Balance and International Security," *International Security*, Vol. 25, No. 1, Summer 2000, 87.

enemy trenches and defenses were built and attacked again and again behind German lines. The mockups consisted of trenches, barbed-wire entanglements, live fire from mock defenders, and full dress rehearsal attacks. Immediately, the junior officer and NCO relationship on the battlefield was being redefined. No longer would junior officers lead from behind. Now, they would have to work directly with the NCO and the men to achieve the strategic plan of command staff. Gone were the days of mass formations moving across “no man’s land” with bayonets fixed. Getting individual and independent units behind the enemy’s line, in order to disrupt, confuse, and defeat mass formations and fortifications, were now the main goals of the attack.

The impact of the training on the junior infantry officers was felt almost immediately in the trenches. The effect on the NCO squad leader in the German military cannot be underestimated. Long used behind the firing line to ensure young enlisted men did not break rank and leave the battlefield, the NCO was now in front and in command. Rehearsals allowed the squad to become an irreplaceable element responsible for individual actions and coordination of its own firepower. The tactics of the newly named “Assault Battalion Rohr” were born in the junior ranks, supported by the senior commanders on the General Staff, and quickly spread throughout the armies of the Central Powers.

In February 1916, Crown Prince William – the chief ally of Colonel Bauer and his Assault Battalion concept – invited Captain Rohr to visit him at his headquarters where he observed a tactical exercise involving the entire Assault Detachment. Prince William wished to bring all infantry units up to the level of Assault Detachment Rohr. As the fighting at Verdun raged well into 1916 the German army began converting units into Assault Detachments based on the model of Captain Rohr. Unfortunately, before all could be trained, Rumania entered the war on the side of the Allies.²³ The Germans were forced to send a hastily assembled force to support their already struggling Austro-Hungarian

²³ Rumania, or Romania, declared war on Austria on August 27, 1916. General Ludendorff was already in command of all German forces as General Falkenhayn had been relieved of command. Falkenhayn would command again in Rumania where he helped successfully defeat the Rumanian army.

allies. Three out of the first four battalions chosen were removed from the school and transported to Rumania. These *Jäger*, or “Hunter,” Battalions were excellent mountain fighters and well suited to the tactics of the Rohr School. One *Jäger* Battalion remained and became the second Assault Battalion in the German army.²⁴

Clearly, two Assault Detachments were not adequate to meet the need of the entirety of the German army. General von Falkenhayn realized this, and before he was demoted from command of the German army, ordered a number of his divisions to send two officers and four NCO’s to the Assault Battalion Rohr School for training. The officers would then return back to their units with the mission of training company and platoon size assault units within their respective divisions. Many divisions had already formed units on their own initiative, but now they would be supported by the General Staff with equipment, training, and personnel to fight successfully as true Assault Battalions.²⁵

By September, the assault units had gained another influential ally: General Erich von Ludendorff. While he was visiting the Crown Prince at his headquarters, General Ludendorff was first made aware of the new units being trained at and around Verdun. Having been on the Eastern Front in Russia Ludendorff was unaware, for the most part, of the new tactics being utilized. Ludendorff had just taken de facto command of the German Army from Falkenhayn. Ludendorff was very impressed with the assault units and was convinced they should become the model for the entire army. On October 23, 1916 Ludendorff authorized the formation of Assault Battalions within each army on the Western Front.²⁶

Training of new assault battalions was now officially placed into German manuals. For nearly two years junior officers had realized the manuals were outdated and obsolete, and had been training contrary to the old method of infantry attack. However, official recognition of this fact by Ludendorff and the

²⁴ Gudmundsson, 77-80.

²⁵ Ibid., 77-80.

²⁶ Ibid., 84.

General Staff two years into the war at least meant new recruits would have the benefit of better, more practical, methods of attack. Erwin Rommel and his *Württemberg* Battalion was one self-trained “assault unit” that developed separately from the other Assault Detachments, but the techniques and strategy employed fit perfectly with the tactics of the Rohr Assault Battalions (Figure 8). In addition, certain officers and NCO’s likely attended the Assault Detachment schools at some point. Still, the incidents of self-training highlight the freedom and ability allotted to the German junior officers in combat to think and act freely and to adapt to real-world combat situations. Merit was based not on text book solutions, but on how well an officer could react. The German General Staff was coaching the team, but the junior officers and NCO’s were definitely able to call the plays. It was truly a system based on centralized control, but decentralized execution at the tactical level.

In years following Verdun, the Assault Detachments transformed an entire system from the bottom up. The General Staff of the German army bought into the new offensive capability of the stormtrooper units. In turn the General Staff implemented a plan to ensure each fighting division had the training, equipment, logistics, and personnel necessary to deploy such units. It was left up to the officers in charge of the Assault Detachments and their stormtroopers to provide the return on investment. Commenting on the role of command in war, military historian Martin van Creveld has shown that improvements in communications tend to be used by high-level commanders to reduce the initiative and discretion of lower-level commanders, often with disastrous results. Van Creveld states, “Those armies have been most successful which did not turn their troops into automatons, did not attempt to control everything from the top, and allowed subordinate commanders considerable latitude.”²⁷ The German army under Ludendorff, by adopting these new tactics, set in motion a sequence of events that would change the way armies fought modern warfare.

²⁷ Martin van Creveld, *Command in War*, Harvard University Press, 1985, Ch. 7. Cited in James Q. Wilson, *Bureaucracy*, Basic Books, 1989, 228.

Figure 8. **BELOW:** German Stormtroopers sit at the base of Mt. Mrzli Vrh after the 1917 breakthrough. **BOTTOM:** Lt. Erwin Rommel, facing camera, with his Württemberg Mountain Battalion in October 1917.



THIS PAGE INTENTIONALLY LEFT BLANK

V. THE ISONZO FRONT

The King of Italy has declared a war unto us. The faith pledged to its two true allies has been broken by the Kingdom of Italy in a manner which in history remains as yet unheard of. For more than thirty years there persisted an alliance, within which the Italian Kingdom was enabled to extend its domains and to thrive as it otherwise never would have deemed to be possible; yet in this perilous hour Italy has forsaken us and, with its banners unfolded, defected to camp with our foes. ²⁸

- Austrian Emperor Francis Joseph II, Manifesto, "To My Nations"

A. UNREDEEMED ITALY

On the eve of WWI, the Isonzo Valley was secure Austrian territory and had belonged to the House of Habsburg since the middle ages. In 1914 the Isonzo River formed the western border of the Austrian Littoral, known as the province of Küstenland.²⁹ It was one of the smallest of the Austrian holdings with just under one million subjects. The Austrian Littoral encompassed two provinces, the provinces of Trieste and Istria. Like the Austrian empire, the demographic breakdown of the Littoral was diverse: by language, 46 percent Italian, 21 percent Slovene, 21 percent Croatian, and only 2 percent German – Austrian.³⁰ Geographically the region was as varied as the population. In the north of the Isonzo Valley were the snow capped peaks of the Julian Alps where the Isonzo forms near the town of Villach. In the South, only about ninety kilometers, is the sunny Adriatic and Trieste. A bit further is the end of the Istrian Peninsula, including a number of its scenic islands – present day northern Croatia.

It must be noted needs that a number of the locations, rivers, mountains, and towns of the region have multiple names. This is explained by the diverse cultures and languages of the region. Geographical names are discussed in

²⁸ Petra Svoljšak, *The Front on Soča*, Cankarjeva založba, Ljubljana, 2002.

²⁹ John R. Schindler, *Isonzo, the Forgotten Sacrifice of the Great War*, Praeger Publishers, 2001, 3.

³⁰ Schindler, 3.

Appendix A, including the Italian, German, and Slovenian equivalents for easier present day reference. For this thesis the names of locations, as they were in 1914, are used.

The capital, and largest city, of the province was the city of Trieste. A natural port at the head of the Adriatic Sea, Trieste had for centuries been the main maritime outlet for the Habsburg Empire. At the time of WWI it was the eighth busiest port on earth.³¹ The other city of the Austrian Littoral was the much smaller city of Gorizia about twenty five miles north of Trieste, on the east bank of the Isonzo. Called the “City of Violets,” it was known mainly as a retirement home for Austrian Army officers. At the southern tip of the Istrian peninsula was the third city of the region, Pola, and the headquarters of the Austrian fleet. The rest of the Littoral was made up mainly of agricultural lands and small towns, much as it is today. Heading north from Pola, along the Adriatic coast, are the towns of Pirano and Capodistria, before Trieste. Around the tip of the Adriatic, just north of Trieste, the massive Miramare Castle sits on a jetty into the Adriatic. Miramare was the home of Archduke Maxmilian, younger and ill-fated brother of Emperor Franz Joseph, and his family. Maxmilian would set sail for Mexico from Miramare Castle, but never return. Continuing straight north from the castle, to the edges of Gorizia, is the region known as the “Carso” or “World of Rock.” The Carso is a plateau of limestone with numerous depressions and crevasses. There is little vegetation or growth of any kind and, at first look, the Carso appears as desolate and unique as the name implies. Closer examination reveals within the depressions and crevasses plants can take root, mainly grape vines that produce the regions *terrano* wines.³² North of the Carso, between the limestone plateau and the beginning of the Julian Alps, lays the town of Gorizia. A beautiful city, dating back to the Roman Era, Gorizia maintains a strategic position where the Isonzo flows out of the Alps and into the Friuli Plain before heading south to the Adriatic. North along the Isonzo, against its current, standing at the mouth of a tremendous river gorge rises Mt. Sabotino

³¹ Schindler, 3.

³² Schindler, 4.

(2,010 ft.) to the west and Mt. Santo to the east (2,250 ft.). The latter was particularly noted for a medieval monastery and Christian pilgrimage site at its peak overlooking Gorizia, and the entire lower Isonzo, known as Sveta Gora.

Following the river further north and east from Gorizia the Isonzo snakes its way through the Kolovrat and Julian Alps. Dotted with small towns along its banks, the cold emerald green water reaches the small, but strategic, Tolmino (Tolmin) bridgehead. Tolmino, and its sister town and railhead St. Lucia (Most na Soc), would serve as the primary logistical hub for the Austro-Hungarian forces in the region. Continuing north from Tolmino, about fifteen kilometers, the river reaches the second of three major bridgeheads at the quaint and idyllic town of Karfreit (Kobarid / Caporetto). The towns of Karfreit and Tolmino at the base of Mt. Nero (Krn - 7,500 ft.) – one of the highest and most strategic Alpine peaks in the region – would become the geographic Achilles heel of the entire Italian Front. The last major bridgehead along the Isonzo, before it disappears into the high Julian Alps, is the town of Flitsch (Plezzo / Bovec). After Gorizia, Flitsch was one of the largest cities on the Isonzo's banks. Flitsch sits at the base of the second highest mountain along the Isonzo, Mt. Rombon (7,287 ft.). Italian commanders would develop what could only be described as an obsession with the capture of the high peaks overlooking the Isonzo.

It was these mountains, towns, cities, coastal plains, and fertile river valleys that made up a significant portion of what the Italians called *Italia Irredenta*, or “Unredeemed Italy.” In 1882, Rome, Vienna, and Berlin had formed the Triple Alliance, a defensive pact that bound the three states together militarily. Italy, afraid of being diplomatically and militarily isolated, had thus allied herself with her traditional enemy, Austria. The three powers even undertook considerable secret military planning to put Italian armies in the field alongside their former adversaries.³³ The only possible way for Italy to gain *Italia Irredenta* was through military means as Austria would not give it up freely.

³³ Schindler, 9.

Therefore, when war broke out in 1914, Austria placed few troops along the Italian border. What was the point of preparing for war on an ally?

On July 31, 1914 the Italian cabinet decided in favor of neutrality in the upcoming conflict. Immediate shockwaves could be felt across Europe as the balance of power appeared to have shifted to the Triple Entente of France, Britain, and Russia. Germany and Austria were stunned by the betrayal, as was the Italian General Staff. On the same day the cabinet declared neutrality. General Luigi Cadorna, chief of the Italian General Staff, had sent his war plan to King Vittorio Emanuele III. The plan called for the immediate dispatch of an entire Italian field army to assist Germany against France. Ironically, on August 2nd – the day neutrality was officially declared – Vittorio Emanuele III approved Cadorna's plan.

General Luigi Cadorna was a poor choice of commander to lead Italy in the greatest war Europe had ever seen. Within weeks of neutrality being declared, Cadorna was urging his government to declare war on Austria and attack it in its unprotected rear. Cadorna's urgings were only taken under advisement at the time, as the Italian army was not ready for war. Italy had taken too long to prepare for the upcoming conflict and was going to be woefully behind the other combatants. Neutrality gave Italy the time it needed. Yet it wasn't easy since Italy had very few natural resources and lagged in industrialization. As historian John R. Schindler writes in his book, *Isonzo*:

Italy had depressingly few natural resources, and was overwhelmingly dependent on foreign fuels and raw materials; in a typical year, 90 percent of Italian coal was imported from Britain. Even the impressive increases in steel output amounted to little progress: Italy produced 90,000 tons of steel annually, whereas Germany and Austria together produced 20 million. Economic weakness placed strong limits on Italy's military potential.³⁴

Schindler goes on to describe the problems facing the leadership of the Italian army:

³⁴ Schindler, 10.

Unlike most other field armies in Europe, the Italian army had trouble recruiting intelligent, hardworking young men into the officer corps. Too often it got those unsuitable for other professions who were interested neither in soldiering nor in their men. Worse, the army tended to promote timeservers and bureaucrats to its highest ranks. Former Prime Minister Giovanni Giolitti noted on the eve of WWI, "The generals are worth little, they came up from the ranks at a time when families sent their most stupid sons into the army because they did not know what to do with them."³⁵

Cadorna was a bureaucratic timeserving general, worse than any other Chief of Staff commanding forces in the field. He was sixty-four years old when he took command of the Italian army. He came from a military family and attended all the right military schools and training academies. Thus, he spent most of his career at headquarters or on staffs. This meant he spent little time with field units and knew little of what actually goes on below the headquarters level. He worked his way up through the ranks because of his connections in Rome, and made numerous enemies along the way. He was cold, calculating, and very methodical in all that he did. He was demanding and expected success from all who worked under him. He dealt harshly with those who failed, or who criticized him. For example, Cadorna court-martialed Giulio Douhet, commander of the first Italian Air Unit in 1915 and often credited as being the father of strategic bombing theory, for criticizing the conduct of the war. Lover of anything Roman, Cadorna reinstated the ancient custom of decimation (one in ten would be picked out and shot) applying it to units who failed to accomplish their mission in combat. In short, he represented all that was bad with the Italian officer corps.

B. WAR ON THE "ISONZO FRONT" 1915

Declaring neutrality did little to place Italy in a comfortable position among the warring parties of Europe. Should the German and Austro-Hungarian alliance be successful, Italy would be faced with two very angry former allies its borders. Italy, fearing this outcome, dispatched a secret courier to London to

³⁵ Schindler, 11.

explore the possibility of joining the cause of the Triple Entente, in exchange for territorial concessions – *Italia Irredenta*.

On April 26, 1915, with the war going very badly for the Austrians in Russia and Serbia, Italy signed the Treaty of London committing her to an invasion of Austria in one month's time. By the end of May, Italy's fourteen army corps were readying for the invasion of Austria. Ten months after declaring neutrality, Italy was going to war against the Habsburg Empire.

Italy joined the Allied cause in the spring of 1915 for two reasons: 1) an Allied guarantee of support and 2) the national desire to "liberate" what the Italians felt were traditionally their lands. Because ethnic Italians predominated in terms of numbers, many Italians felt that Austria did not have the ancestral right to those lands. Joining the Allied cause came as quite a shock, not only to the governments of Germany and Austria-Hungary, but to the planners of the Italian military.

The last thing the armies of the Habsburg Empire needed was another front to defend. Already struggling against Russia in the Carpathian Mountains, where nearly all of its fighting forces were positioned, five armies with fifty-three infantry divisions and eight cavalry divisions³⁶ were on the verge of collapse. In Serbia, a much smaller foe in all respects, little progress towards victory was being accomplished. The army was short of everything from modern weapons, especially artillery, to supplies and even manpower. Russian prisoners of war were used to build everything from trenches to roads in an effort to supply the Habsburg army. The shortage of manpower was a result of both size and ethnic makeup and lack of adequate funding to train large groups of reserves. A cross section of one hundred soldiers in the Habsburg army would break-down to twenty-five Germans, twenty-three Hungarians or Magyars, thirteen Czechs, nine Serbs or Croats, eight each Polish and Ukrainians, seven Romanians, four Slovaks, two Slovenes, and one Italian.³⁷

³⁶ Schindler, 23.

³⁷ Schindler, 27.

The head of the Habsburg General Staff was General Conrad von Hötzendorf. A progressive individual and very intelligent, Hötzendorf was highly regarded and respected among the officer corps. In his "Summation of the Situation at the Beginning of the Year 1914," Conrad concluded that the time for preventive war had passed. After the assassination of Archduke Franz Ferdinand, he mobilized his army for battle according to well laid plans, but he faced the impending war with resignation, even fatalism. He wrote, "It will be a hopeless struggle, but nevertheless it must be, because such an ancient monarchy and such an ancient army cannot perish ingloriously."³⁸

The Habsburg army entered the war early in 1914 against Serbia, hoping to wholly defeat the small peasant power quickly so it could focus on the Russian problem in the East. The Serbian army, mostly comprised of recent combat veterans of the Balkan Wars, inflicted defeat after defeat on the Austrian forces. By the end of the year, little progress had been made and even worse news was coming from the Russian Front. In the Carpathians, the Russians were threatening to break through the Habsburg defenses around Galicia, opening a highway into the heart of Habsburg territory. As 1914 drew to a close the Austrian casualties were immense. Its army had lost 1.2 million men killed, wounded, or missing.

1915 would not start out better for the Habsburg Empire. The army was being rebuilt with any men available and shipped immediately to the Russian Front. By late-March the mighty fortress of Przemyśl, one of the last Austrian strongholds, was forced to surrender. More than 110,000 men and 2,500 officers would be forced into Russian captivity. The Russians went back on the offensive immediately, but were unable to turn their tactical victories into strategic successes. The Habsburg army was able to survive because the Russians were equally as weakened, battered, and depleted as their opponents.

With the entrance of Italy into the fray, Austria had very few battalions, let alone divisions, to spare. Italy constituted, only days before, a neutral border and

³⁸ Schindler, 31.

was consequently very low priority for Austrian commanders. The Isonzo Valley had been quiet since the outbreak of war, even more quiet than usual, as most of the men were off fighting on foreign fronts. Italy's move to join the Allies and subsequent mobilization did not go unnoticed by Austrian intelligence. Conrad, growing increasingly upset and concerned by the Italian military moves, wired his German counterpart Falkenhayn asking to withdraw seven divisions from the Carpathians for deployment to the Isonzo. Falkenhayn refused. So, the Austrians were forced to make due with what they could again scrape together. By mid-May, the entire Littoral including the Isonzo Valley was garrisoned by three under-strength divisions. The divisions had little in the way of modern weaponry and even fewer, if any, artillery pieces. The day Italy declared war, the entire line from Mt. Nero to the Adriatic, a distance of thirty-five miles, was held by just twenty-four Austrian battalions, 25,000 rifles supported by 100 guns.³⁹ If Cadorna was going to "walk to Vienna" as he proposed, then there was little Austrian defense to prevent him.

The day the Italians officially entered the war, May 23, 1915 Cadorna's army was already mobilized and ready for combat. Months of secret preparation had gone smoothly. His force, on paper at least, was impressive. Counting second-line reserves, the army included thirty-five infantry divisions, a dozen divisions of militia, and four cavalry divisions, as well as a division of *Bersaglieri*, elite light infantry. There were also fifty-two battalions of *Alpini*, crack mountain troops and fourteen battalions of combat engineers. The field artillery boasted 467 batteries, almost 2,000 guns and howitzers.⁴⁰ In nearly, almost one million men were ready for combat. Like the armies of the other combatants ten months before, the Italians marched to the Isonzo Valley in high spirits and enthusiasm.

Cadorna set up his staff headquarters in the city of Udine, about twenty kilometers behind the forward lines. About this time a combined German-Habsburg offensive opened in Galicia on the Russian Front. Nearly one dozen German divisions attacked on a front less than twenty miles, pushing the Russian

³⁹ Schindler, 37.

⁴⁰ Schindler, 41.

3rd Army into retreat. At the same time, an Austrian counterattack in the Carpathian Mountains allowed the recapturing of the fortress at Przemyśl by early June. By the end of the month most of the lost territory was back in Habsburg hands. The Russians suffered unimaginable losses in the late-Spring of 1915, and all other Allied gains had been erased. With the threat of Russian victory removed, Austria could now focus on the Isonzo.

On May 23rd, when victory was close in the east, Austria immediately dispatched two numbered Corps, the XV and the XVI, from Serbia to the Italian frontier. These two corps constituted more than forty veteran mountain battalions. Conrad also created a new command, the 5th Army, responsible for the Isonzo and Littoral regions. He appointed General Svetozar Boroević von Bojna, “Bosco,” to run the 5th Army.

The fifty-eight year old general was born the son of a Serbian *Grenzer* family from Croatia. The Habsburg Army’s *Grenzer* regiments had defended the empire’s southern border against the Ottomans since the early sixteenth century. Until its disbandment in 1881, the unique Military Border, as it was known, provided the Habsburgs with their fiercest soldiers, wild Serbian and Croatian irregulars renowned for their loyalty to the emperor and their brutality toward all foes. He had spent his entire life serving Emperor Franz Joseph.⁴¹

A professional officer and strict disciplinarian, Boroević would not tolerate failure. Unlike Cadorna, Boroević was a respected field commander and had earned the respect of the men he commanded. His strict policies of not giving one foot of ground to Italian attackers without a tough fight consistently confounded Italian generals in the early offensives. Boroević’s men exhibited much higher morale than their Italian counterparts. For the Habsburg soldiers, they were defending their homeland against a hated enemy; especially after feeling stabbed in the back just a few months earlier by Italy’s declaration of war.

The first Italian offensive began in the last days of May of 1915. The army advanced quickly into the upper Isonzo Valley (Figure 9) without much of a fight.

⁴¹ Schindler, 46.

The Austrian defenders, now nearly twice as numerous as a few weeks prior, had decided to make their stand in the high Julian Alps. These, the Austrian army knew, were precisely the mountain peaks the Italians needed to take.

Meanwhile, the Italian army did manage to take Karfreit and the mountain peaks of Vrata (6,400ft) and Vršič (6,260ft), in the North of the Mrzli range (Figure 10), without much opposition, giving them a foothold over the Isonzo. The Austrian defenders did not have enough time to fortify all the peaks by the end of May.

The Italians however did not rush into the central and southern Mrzli (Figure 11). This allowed the Habsburg armies' time to fortify and reinforce their key positions. Borojević now ordered his men to hold them at all costs. Casualty rates were about to rise. The Italian army needed to take Mt. Nero next, the strategic importance of which cannot be understated. The highest peak in the chain, the top of Nero provided a clear view of every position from Flitsch to the Adriatic on a clear day. The Italians attempted numerous attacks on Nero's peak in the first two weeks of June, 1915, but suffered heavy casualties from its Hungarian defenders. At times, the defenders only had to roll heavy boulders down onto the attacking Italians. Nonetheless, by June 16th the peak was firmly in Italian hands. Yet, the quick capture of Mt. Nero infected the Italians with a degree of overconfidence. More to the point, these early gains would be the only victories the Italians would achieve for the next year. The Mrzli range had yet to be conquered. Only three peaks and one bridgehead were under Italian control.

The Habsburg army was entrenched on Mt. Batognica, the neighboring peak to Nero (Figure 12), and still controlled the southern third of the Mrzli range. All along the Isonzo Valley the Italians would find digging out heavily entrenched, veteran Austrian units, to be difficult and costly. Italians would report 13,500 casualties in the first offensive; the Austrians 10,000. In reality, the numbers were more likely 30,000 Italian and 20,000 Austrian, as neither army were particularly "accurate" in the reporting of casualties. The first offensive set the tone for the next ten Italian offensives and highlighted the deficiencies in its

commander and chief, Cadorna. His blindness to the realities of the modern battlefield doomed his armies to fight with men against steel and fire. Enthusiasm and courage weighed little against well entrenched machine guns.⁴²

The Italians would attempt three more offensives along the Isonzo in 1915. The Second Offensive began on or about July 18, 1915. The main focus of the attack was the region known as the “Carso” south of Tolmino, around the city of Gorizia. Supporting wings attacked in the south and north, but again Cadorna insisted on massed frontal assaults and few gains were made. Insufficient artillery supplies and increased Habsburg reinforcements forced Cadorna to call it off in early August.

Habsburg forces began digging deep caverns into the stony mountains and hillsides (Figure 13). The natural limestone of the Isonzo Valley made suitable shelter from the heavy Italian artillery. These caverns, blasted and cut by thousands of engineers and Russian prisoners of war, would be the savior of the Habsburg defenders. The casualties continued to mount to nearly 50,000 on each side. In response, Italy and Cadorna called up more classes of reservists to fill in the ranks.

Following the Second Offensive, Cadorna gave his men a much needed break, not because he felt they deserved it, but because he wanted more artillery and men added to the lines. The Austrians used Cadorna’s six-week delay to further strengthen their defensive positions. Italian forces were only twenty miles from Trieste and Borojević knew he had to hold everywhere, to prevent it falling to the Italians.

The Third Offensive began much as the first two, with massed assaults and heavy artillery bombardments from the Italian lines. The focus was the city of Gorizia and the Julian Alp fortifications of Borojević. The Italians wanted to remove any threat from its left flank before it advanced on Trieste.

Austrian signals intelligence, the only country besides France with such tactical units, rendered first-rate service to Borojević and his commanders. They

⁴² Schindler, 59.

were reading the Italian playbook along with the Italian commanders. Consistently, the signal units intercepted Italian message traffic of an upcoming offensive. The Habsburg 5th Army knew in remarkable detail every facet of the Italian order of battle. To compound matters, the Italian army didn't hide their movements very well and preparations for every offensive were easily visible to Austrian observers.

The Third Offensive was called off on November 4th. This offensive cost Cadorna nearly 67,000 more casualties. In reality the numbers were much greater. Italian soldiers fought bravely, but the brutal tactics of its Commander in Chief led to what Benito Mussolini, a veteran of the Third Offensive, termed "those days of extreme hardship" on the upper Isonzo.⁴³ The 5th Army was as devastated by the Third Offensive as the Italian forces suffered almost 42,000 casualties. The Austrians were holding, but could not hold out against the continued offensives of the Italians for an extended period of time. The manpower advantage still lay in the Italian corner – and Cadorna knew this.

On November 9, 1915 the Italian commander would send his forces into the breach one last time before the alpine winter reached full fury. After only a weeks rest, the Italian artillery opened up along the entire front signaling the beginning of the Fourth Offensive. The men once again rose from their trenches in thick lines, attempting frontal assaults on the well entrenched Austrian defenders on the high ground. While fighting raged for two weeks around Gorizia, many Italian Alpine units waited for the weather in the high Julian Alps to clear so they could start their offensive. Meanwhile, snow and rain made it near impossible to stay dry and men began to freeze.

Three long weeks after the massive Fourth Offensive opened, on November 25, the alpine portion of front was able to begin operations. But by November 28 the fighting in the mountains was over. Winter in its most severe

⁴³ Schindler, 103.

form had arrived. Fighting ended the next day around Gorizia, located a bit further south and in the warmer plain, and by December 1 the lines fell completely silent.

The Fourth Offensive, and 1915, was over. The Fourth Offensive cost the Italians, unofficially, almost 50,000 more casualties bringing its total for the year to nearly 230,000 of its finest soldiers. The net gain was a few small villages, some trenches, and a couple of mountain peaks won early on. The Austrians lost 25,000 soldiers in the Fourth Offensive and nearly 100,000 in the last two combined. Yet, they still held their positions.

Figure 9. Upper Isonzo Valley from Mt. Batognica. Karfreit (Caporetto) is the town in the center of the valley in front of the lower ridge. Tolmino is directly left of the edge of this picture. Flitsch and Mt. Rombon are barely visible at the top of the picture. The mountain directly across the valley is Mt. Matajur, where Lt. Erwin Rommel won his first *Pour le Merite*, or “Blue Max.”



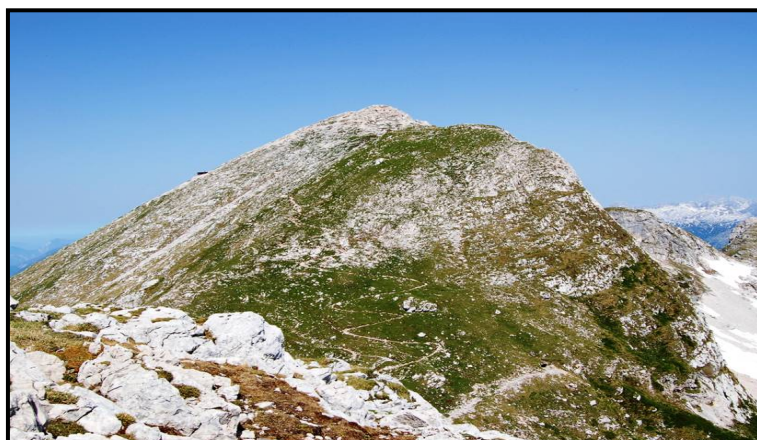
Figure 10. Mt. Vršič and Mt. Vrata, in the distance, from Mt. Batognica in the foreground. Benito Mussolini first fought saw combat on the slopes of Mt. Vršič.



Figure 11. Mt. Mrzli Vrh today from Tolmino.



Figure 12. Mt. Nero (Krn) from Batognica.



C. THE END OF THE BEGINNING, 1916

Throughout 1916 the Western Front was faced with the grim reality of the Verdun Campaign. Falkenhayn's plan to "bleed the French army white" was producing casualties and expending supplies at a machine's pace. Meanwhile, along the Isonzo, 1916 opened much the same as 1915, quietly. The armies were merely waiting for the spring thaw, after one of the worst winters in decades, to renew hostilities. The French Commander-in-Chief, Joseph Joffre, was placing pressure on the allies to open offensives in order to reduce pressure on the French at Verdun. The Habsburg armies were dug in, much the same as the Germans in the west, with the hopes of bleeding the Italians white. Cadorna would oblige his ally Joffre (Figure 15).

Cadorna would initiate five offensives during the year. In response, the Austrians would be successful throughout the year at inflicting hundreds of thousands of Italian casualties, while giving up minimal amounts of Habsburg territory. There was one exception; in August of 1916 the Austrian defenders would be forced to surrender Gorizia after days of grueling defense.

On March 12, the Fifth Offensive began as the spring thaw was beginning. Cadorna had done little to strengthen his army over the winter. The Italians were no more ready to fight in 1916 than at the end of 1915. Cadorna had been baptized in modern warfare over the last year, but still failed to adapt to the changing nature of warfare. Trench warfare had emerged on the banks of the Isonzo with a vengeance, a development that even Cadorna could not fail to notice. The possibility of rapid battles of maneuver he had hoped for was gone. Italy was now committed to fighting a long, siege-like war of attrition against Austria. The strong entrenchments, barbed wire, machine guns and ample artillery that covered the Isonzo valley removed all possibility of maneuvering for advantage.⁴⁴ The Fifth Offensive would be over quickly. By March 17, 1916 Cadorna was forced to call off the half-hearted offensive due to weather and the threat of a new Austrian attack from the Tyrol region at Italy's northern border

⁴⁴ Schindler, 130.

around Trentino. Fighting continued sporadically along the Isonzo for the next few months when Cadorna was finally able to successfully launch his next offensive.

Up until this point in the war, gas had not been used on the Isonzo Front. In June 1916 this changed. Austrian forces unleashed their first phosgene attack on Italian lines with horrific effect. Italian forces along Mt. San Michelle were not prepared for the use of gas. When the combine artillery and phosgene attack hit, those that could run did so with a new fear. The others suffocated in their trenches. Almost 7,000 perished in the attack and the Austrians barely recorded any casualties overrunning the Italian position. The attack would have lasting effects on the Italian soldiers. The sight of thousands of comrades drowned in the trenches from phosgene would resonate through the entire army. Italian soldiers became noticeably less likely to accept prisoners from this point on. This event may have motivated them to victory two months later in the Sixth Offensive.

August brought the most successful Italian offensive of the entire year, arguably the entire campaign. The Sixth Offensive saw the capture of the city of Gorizia; one full year after hostilities had begun. The front was pushed forward five kilometers along a twenty kilometer stretch on the Carso. The loss of Gorizia was significant for the Austrian forces defending the upper Isonzo Valley in that it was a major logistical hub and bridgehead into the center of the Austrian defenses. Only one significant logistical point remained along the Isonzo not in Italian hands, Tolmino. Austrian counterattacks limited the Italian gains to little else of significance.

The capture of Gorizia gave Italian forces a tremendous morale boost and gave Cadorna and his commanders the impetus they needed to continue offensive action with the hopes of capitalizing on the increased spirit of their soldiers. As Verdun was showing on the Western Front, spirit and élan can only go so far against heavily entrenched forces, machine guns, and heavy artillery. Casualties were again high. Cadorna lost nearly 100,000 soldiers in the one

week offensive. The capture of Gorizia alone cost the Italians nearly 30,000 casualties, a number equal to the pre-war population of the town itself! The Austrian casualties, while less numerous, were significant, nearly 50,000 casualties and 8,000 prisoners of war.

The Seventh, Eighth, and Ninth Offensives closed out 1916 much the same way it was opened – with Italian forces unable to dislodge Austrian defenders in attack after attack. Each was mainly a continuation of the previous offensives. The Seventh Offensive, September 14-17, was an attempt to capitalize on the successes of the Sixth Offensive. Most attacks focused around the Gorizia bridgehead. Heavy casualties once again forced Cadorna to call off the offensive rather quickly. The Eighth Offensive, October 10-12, was shorter than its predecessor, but the goals were the same. Cadorna wanted to extend the left flank far enough to protect the right flank in an all-out push for Trieste.

The final offensive of 1916, the Ninth, was attempted before the alpine winter set in. On November 1st the Italian forces made one last push to extend the foothold they had gained around Gorizia to the Tolmino bridgehead. As before, stiff defense from the Austrians (Figure 14) and heavy Italian casualties forced Cadorna to call off the offensive by the 4th of November. Nevertheless, on the Carso, the Ninth Offensive did get the Italians two miles closer to Trieste; however the Austrian hold on the Carso was in no way threatened. Casualties for the last three offensives of 1916 soared to more than 150,000 for the Italians and 100,000 (counting the sick) for the Austrians.

With the Brusilov Offensive in Russia drawing more and more resources from the Austrian manpower coffers, Cadorna's strategy of pouring thousands of men into the breach, over and over again, was beginning to have an effect on the Habsburg forces. Fewer and fewer supplies and reinforcements were available to replace the casualties on the front lines. The Italians were successful at replacing men and supplies at a much faster rate than their Austrian counterparts. Borojević was able to apply band-aid fixes time and time again, but he knew that without outside assistance that his army couldn't hold out

indefinitely (Figure 15). The assistance he looked for – namely German – was far from coming to fruition. He would have to continue to hold with the forces available to him. With Verdun in the West, Russia, Rumania, and Serbia still fully involved in the East, little aid was available for Boroevič and his beleaguered 5th Army along the Isonzo.

Figure 13. Austrian forces dug deep caverns, *kavernen*, into the mainly limestone geography throughout the Isonzo Valley. The limestone caverns provided adequate shelter from Italian heavy artillery and the effects of the alpine weather.



Figure 14. Alpine winter and Austrian troops in the trenches in 1916.



Figure 15. **TOP:** General Luigi Cadorna. **BOTTOM:** General Boroevič (seated center right) and staff.



THIS PAGE INTENTIONALLY LEFT BLANK

VI. THE SWEET SMELL OF VICTORY

Most of the men in the [Italian] trenches were very young, thinly clad and feeling the cold intensely and they had been left in the line for a long period without relief. Many of them were weeping and some had ice on their faces: the conducting officer said that three or four of them were frozen to death nightly. As winter was coming on fast and conditions in the Austrian ranks, higher in the mountains and with the Alpine hinterland behind them, were much worse. ⁴⁵

- Lt.Col. Pitt-Taylor
British Army General Staff-Italy
December 1917, Monte Grappa

A. RUSSIA

On the Eastern Front, warfare continued to resemble the “mobile” nature the German General Staff desired on the Western Front. Against the Russian Army, the Central Powers continued on the offensive; coordinating infantry advance and artillery operation so that the guns moved in sync with the infantry. The Central Powers had advanced nearly three hundred kilometers by the end of June 1915, and had ground down the Russian army to near exhaustion.

Throughout 1916 and 1917, the East became a testing ground for the new tactical innovations being developed within the German Army and General Staff. The coordination of attack by infantry and artillery succeeded in breaking through Russian positions time after time. Rolling artillery bombardments, infantry and artillery coordination, and tactics emphasizing the offensive had proven to German commanders in the East the value of surprise. The concentration of superior forces against weak spots in enemy lines, and the deep penetration of each weak spot in order to encircle a portion of the enemy force proved consistently effective.

The chief of staff of the German Gorlice operation against Russia was Colonel Hans von Seeckt, recognized by his colleagues as one of the more

⁴⁵ Galli, Richard, “Avalanche,” *Le Grande Guerra*, 2000-2001 [Journal online]; available from <http://www.firstworldwar.com/battles/caporetto.htm>; Internet; accessed 13 October 2006.

outstanding soldiers of his generation. He later became famous as the post-war rebuilders of the German army, and on the Eastern Front he performed very well against the Russians, who during early 1916 pressed the Central Powers hard.⁴⁶ Ultimately, with the failure of the Brusilov Offensive late in 1916 and the fall of Riga in September 1917, the Russians were broken and essentially out of the war. Nonetheless, for a while things were touch-and-go due to a new combatant.

B. RUMANIA

The success of the Brusilov Offensive encouraged Rumania, with her big army, to enter the war on August 27, 1916, on the side of the Allied powers. The Allied grand strategy hoped that with the Austro-Hungarian and German forces spread thin and weakened by fighting on so many fronts, that a combined Russian-Rumanian push in the East would break the back of Germany's strongest ally. At the time Lloyd George noted, "Rumania may be the turning point of the campaign. If the Germans fail there it will be the greatest disaster inflicted upon them. But should Germany succeed, I hesitate to think what the effect will be on the fortunes of our campaign."⁴⁷ Less than four months after declaring war, the Rumanian army had been defeated.

Germany had anticipated such a move by Rumania before the declaration of war. South of Rumania, German General Mackensen had put together an army of Bulgarians and Turks, mixed with some German regiments. In Transylvania, the demoted Falkenhayn would quickly form two armies and was quickly ready to march. Rumania would have been wise to fortify and entrench; instead, it split its army. One large force would go after Falkenhayn in Transylvania while the other went south to harass the rear of Mackensen's forces. One Rumanian medical officer described the fighting in this way:

The mountain we climbed was a mountain of blindness and death.
From the eastern slope, where the battle was not yet decided, wild
cries rang through the rattle of musketry; and up here, in the

⁴⁶ Gudmundsson, 108.

⁴⁷ J. Mosier, *The Myth of the Great War: How the Germans Won the Battles and how the Americans Saved the Allies*, Harper Collins, 2001, 245.

position we had captured, the enemy were wreaking their vengeance on the conquerors. Like a swarm of hornets the shells dashed against the rocks, tearing the flesh from the limbs of the living and the dead . . . One [German] had brought back a gramophone with him from the Rumanian lines; now an idea suddenly struck him, he placed it on a stone and set it going, the page in *Figaro* began to sing, and like the voice of a mad soul Mozart's music rose in a world of ruin.⁴⁸

Erwin Rommel, in the assessment of his units operations against a Rumanian detachment near Gagesti, foreshadowed the tactics his unit would use almost a year later to rout a new enemy, the Italians, at Caporetto:

Efficient use could be made of smoke screens. Initially, the enemy would maintain a heavy fire into the smoke, but his inability to achieve definite results would oblige him to suspend firing. This would be the moment to begin disengaging operations. To deceive, divert, and pin the enemy down . . . we launched an attack in the fog against an enemy of unknown strength, we placed our heavy machine guns well forward and their fire soon cleared the enemy from the ridge. Romanian reserves were such that they were without communication forward and they had neglected to post security elements. Because of this, Lieb's detachment had little difficulty in surprising and dispersing this strong enemy force.⁴⁹

The Rumanians built fortifications to block any offensive taken by the Germans and Austrians. The strongest fortification, at Turtukai, was claimed by the Rumanian commander to be their Verdun. It was 1916 and the battle for Verdun was still raging in the West. A day after making the statement, September 6th, 1916, the fort had fallen, with hardly a shot being fired, and the armies of the Central Powers began spreading out into the mountainous Rumanian terrain. Soon the armies of the Central Powers would be at the doorstep of Bucharest. On December 6th 1916, Bucharest fell and Rumania was forced to surrender. The Allied plan had collapsed. Greece opted out of the war and surrendered to the Bulgarians; and the Serbians were all but contained in the Balkans. With Russia, Rumania, Serbia, and Greece defeated, Germany could

⁴⁸ Jon E. Lewis, *The Mammoth Book of Eyewitness WWI*, Carroll & Graf Publishers, 2003, 244.

⁴⁹ Rommel, *Attacks*, 121.

now send reinforcements to the west. The stage was now set for what could be described as Germany's crowning achievement of WWI.

C. ISONZO FRONT, 1917

After nearly eighteen months and nine offensives on the Isonzo, the Italians had managed to capture one Austrian town, which was a shell of a town after all the artillery bombardments. The Allied commanders met in the winter of 1917 to discuss and coordinate a new strategy for victory. The French and British commanders asked Cadorna for an offensive against the Habsburg forces. Cadorna had used the winter of 1917 to strengthen his army, but was skeptical of any breakthrough of Austrian lines. Lloyd George promised Cadorna numerous divisions and heavy artillery from the Western Front, but the French and British commanders were unimpressed with Italian military performance thus far and balked at the offer. The Isonzo was in the midst of a harsh winter and an early offensive would have to be delayed. Cadorna prepared his army throughout the winter and early spring. His plan was familiar. After heavy bombardment his troops would attack first around Gorizia, and then attempt a breakthrough on the Carso. The ultimate goal was Trieste.

The Austrian 5th Army was at its strongest in the spring of 1917. The long rest allowed all the trenches from Flitsch to the Adriatic to be rebuilt, and the army was now comprised of more than eighteen divisions and 1,500 guns; double its size when fighting began in 1915. The Austrians knew from their intelligence that a new offensive was being planned, but they had no idea of the timing.

At dawn on May 12, 1917 the Tenth Offensive began with the largest artillery bombardment yet witnessed on the Isonzo. Over 2,150 guns and 1,000 mortars punished the Austrian positions throughout the 12th and 13th. On May 14 the Army of Gorizia, a new Italian army specially created by Cadorna for the Tenth Offensive, was ready to attack. The first phase of the attack brought Italian armies some success forward of Gorizia. The capture of the Plava

bridgehead and the mountain peaks of Kuk and Vodice along the Isonzo's western shore, opposite Tolmino, were victories that had eluded the Italians for nearly two years. Tolmino however would not fall.

On May 23, the second phase along the Carso's eleven mile front opened. Again, 1,250 guns and 600 mortars pounded the Austrian trenches. By the time the barrage was over at 4 P.M. the 3rd Italian Army had unleashed a million artillery shells at the Austrians, twenty shells for every foot of the front.⁵⁰ Initial advances were at first very successful in overrunning the Austrian lines, but the inevitable counterattacks always seemed to push the Italians back. By May 28, Cadorna was forced to call off the second phase of the Tenth Offensive with only modest gains on the Carso.

Both armies suffered near 60 percent casualties in the Tenth Offensive. Nearly 90,000 Austrian troops were lost from the overall 165,000 rifle strength. Worse, the numbers included 24,000 prisoners of war, by far the largest number taken yet on the Isonzo. The Italians suffered 160,000 casualties in the offensive with 3,000 more prisoners of war. Both armies were near exhaustion. Cadorna too was facing a severe morale crisis within his army. Boroević was relieved that Cadorna had called off the offensive when he did because he feared his army could not hold out very much longer.

In the summer following the Tenth Offensive Cadorna sent six new divisions into the lines. This gave Cadorna 1.2 million men and nearly 5,200 artillery pieces at his disposal. Against only twenty Austrian divisions and 1,500 guns, Cadorna was sure he would now crack what remained of Boroević's 5th Army (Figure 16). On August 18 the Italian artillery barrage began. It was the last Italian offensive of 1917.

Upwards of 5,000 artillery pieces cascaded fire down upon the Austrian trenches from Mrzli Vrh to the Adriatic. The next day Italian forces rose from the trenches and assaulted the Austrian lines. On the Carso, Italian gains were modest, but the Austro-Hungarian line was continuously being pushed back. In

⁵⁰ Schindler, 212.

the north, Italian gains were more substantial. The 2nd Army captured ten kilometers of ground from the Austrian's. Indeed the Italian advance was so successful in capturing the Bainsizza Plateau, south-east of Tolmino, that the army outran its artillery and supply lines. Thus, the Italians were forced to stop; allowing the Habsburg forces a chance to regroup and reinforce their positions. Had the Italians been able to continue the assault, there would have been little the Austrian forces could have done to stop them.

The advance of six miles on an eleven mile front was significant by WWI standards. Nevertheless, the Austro-Hungarian line ultimately held, but they had paid a high cost in casualties (Figure 17). Cadorna's attack was abandoned on September 12, 1917. Italy conceded 166,000 soldiers lost in its last offensive, while the Austrians suffered 110,000 casualties. Ironically, had there been another Italian attack the Austrian 5th Army would not have held. The Habsburg Army needed help, and quick, if it was going to keep the Italian forces at bay. Without additional men and supplies from their German ally, the line along the Isonzo would crack and Cadorna would finally have had his "walk to Vienna."

It was at this time when German senior leadership realized the seriousness of the situation, and the developing problem. Planning was again begun, this time to find a way to aid the Austro-Hungarian forces against Italy. A Habsburg defeat along the Isonzo, at the hands of the Italian forces, may very well have forced Austria into a negotiated surrender. This was a situation Germany could not afford. Conversely, a German-Habsburg victory along the Isonzo would knock Italy out of the war secure the southern approaches into Germany and Austria. Moreover, victory would open up a southern route for German and Habsburg forces to the Western Front.

Figure 16. "5,000 guns and 51 divisions." The red dots on the map correspond to Italian artillery positions. The blue dots represent Austrian artillery positions.

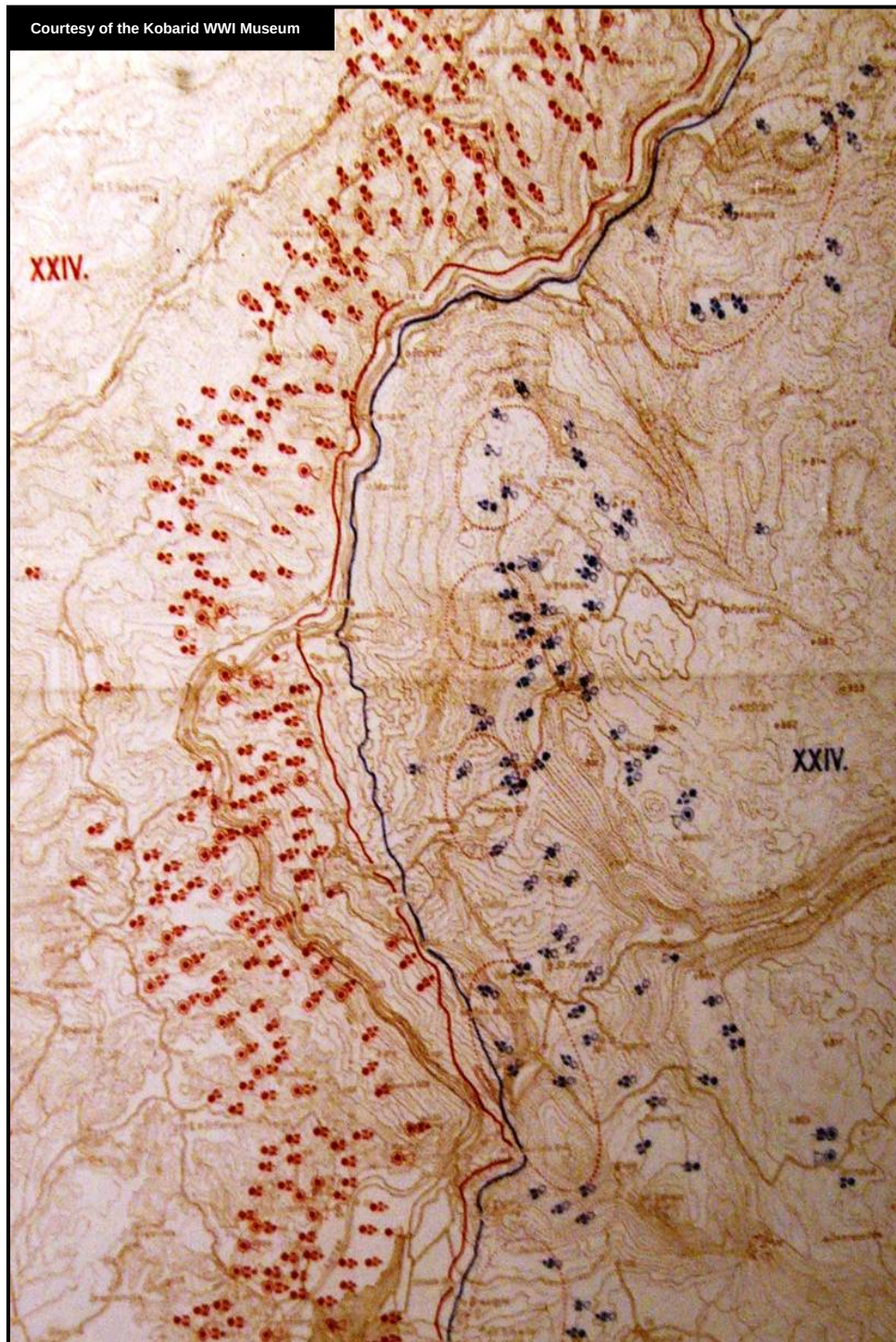


Figure 17. After the 11th Offensive Austrian soldiers were broken and their leadership believed they would not be able to withstand one more offensive by the Italians.



Courtesy of the Kobarid WWI Museum

VII. THE BATTLE OF CAPORETTO

I came to within 150 yards of the enemy! Suddenly the mass began to move and, in the ensuing panic, swept its resisting officers along downhill. Most of the soldiers threw their weapons away and hundreds hurried to me. In an instant I was surrounded and hoisted on Italian soldiers. "Evviva Germania!" ["Long Live Germany"] sounded from a thousand throats. An Italian officer who hesitated to surrender was shot down by his own troops. For the Italians on Mrzli peak the war was over. They shouted with joy.⁵¹

- Lieutenant Erwin Rommel
October 25, 1917, Mt. Matajur

A. GERMANY ARRIVES

Until the summer of 1917 the war between Italy and Austria-Hungary had not been much more than an obstruction on Germany's military maps. For two years the Italian and Habsburg armies had fought eleven terrible battles against each other along the mountainous border separating them. The result had been minor gains by the Italians at the cost of millions of casualties to both sides. But now the Austro-Hungarian army appeared on the verge of collapse at the hands of the Italian armies and their *Commando Supremo*, Luigi Cadorna. His "attritionist" tactics had begun to pay dividends by the end of the summer of 1917, as the Austrians were on the verge of collapsing along the Isonzo.

Aware of the potential for strategic disaster, Germany would now take notice and send reinforcements to aid their beleaguered ally. Not all of the German troops leaving the East and heading west would go to France and Belgium. A few select formations – three infantry divisions and their assault counterparts, and the elite Alpine Corps, including Rommel's Württemberg Battalion, were sent south to the Italian Alps. There they joined by three infantry divisions, each with Assault Detachments, from the West. A newly formed *Jäger* Division would also be sent, in preparation for the upcoming combined German/Austro-Hungarian counteroffensive. The place chosen by the high command for the attack was the valley of the Isonzo River.

⁵¹ Lewis, *The Mammoth Book of Eyewitness WWI*, 327.

This was a perfect choice for the upcoming offensive. The mountains on either side of the river are as high as any along the front. There were far fewer peaks than anywhere else in the Julian Alps. Many of the valleys north and south of Karfreit run east to west into the Isonzo Valley. These would make great highways for any attacker and would allow good covering fire from artillery on the peaks above.

The arriving divisions were organized and assigned to the 14th Army under the command of Otto Von Below, a veteran commander of the operations in the East under Ludendorff. He wouldn't change tactics in Italy. Assault troops were to play the decisive role in the pending offensive.

Throughout September and October of 1917, the troops assigned to the 14th Army arrived under thick operational security. Movements occurred only at night and most forces stayed completely out of sight of Italian observation flights and outposts. Many units were kept far enough behind the lines to be brought up days before the offensive.

A systematic training program was then set in motion by each division, including mock attacks, long training marches in the thin mountain air, and familiarization in assault tactics and mountain combat. In addition, the Assault Battalions would be using a new weapon, the Maxim 08/15 light machine gun. While not the first light machine gun of the war, it packed the same firepower and as its more recognized heavy machine gun cousin. The critical advantage was that the Maxim 08/15 could be carried by a single stormtrooper (Figure 18).

Although stretched along an extensive line, the force facing the Germans was impressive. In spite of the fact that Cadorna had not fully replaced the 300,000 casualties from the last two Italian offensives, the Italians still had more than one million men on the line. Even more impressive, they had nearly double the two thousand artillery pieces the combined German and Austrian forces could bring to the line. On the other hand, German and Austrian signals

intelligence and aircraft flying over Italian positions were able to find, and precisely locate, most of the Italian artillery and strong points prior to the offensive.

Figure 18. German Stormtroopers training with the Maxim 08/15 light machine gun (with drum magazine and large barrel jacket).⁵²



The Italians wrongly assumed that by October 1917 it would be too late in the year for the Central Powers to mount any kind of large scale offensive in the mountainous terrain of the Isonzo Valley. The Italians knew the Austrians were near breaking and were virtually unaware of any German reinforcements. The Austrians had not mounted even a single offensive along the Isonzo; not even to take back the accumulative territory they had lost. The Italians, unlike the previous two winters, this one was turning out to be rather mild by comparison. Italian forces were poorly dug in following the Eleventh Offensive. Their positions, including artillery, were easily spotted. Even Cadorna had retired from the field for a short vacation, returning just two days before the offensive was to begin. He did not realize that his army was in mortal danger. By the time he did, it was too late. Most orders to prepare for an Austrian counter offensive were

⁵² Marko Simič, "Po Sledih Soške Fronte," Ljubljana, 1998, 183.

either taken by commanders in the field and ignored, or carried out to the least extent possible. Only a few units on the Italian line were prepared for the onslaught that was about to come crashing through.

It was an intelligence failure of staggering proportions.⁵³ At 0200 on the morning of October 24, 1917, all available guns, howitzers, and trench mortars began firing a combination of artillery shells, including gas (Figure 19). Whole Italian platoons were killed. The sentries often succumbed too quickly to wake those asleep and the sleeping died where they lay. Where soldiers had decent gas masks, namely the artillerymen, their unprotected ammunition mules and sled dogs were killed.

Caught off guard by the bombardment, Italian counterbattery fire was sporadic and inaccurate. From Tolmino to Flitsch the first assault forces began to move into the trenches preparing for attack. German stormtroopers from all the divisions of the 14th Army, along with their Austrian counterparts, moved into place with mortars, flame throwers, light and heavy machine guns, hand grenades, and their light artillery.

Following the German example, the Austrian army had begun experimenting with assault units. They would select elite, young, and fit soldiers to form these new assault companies. They would be given heavier weapons, tactical training, and most important, better rations and pay. They quickly became the elite units of the Habsburg Army. By the end of 1917, every Austrian division was projected to have one battalion of Stormtroopers like its German ally; but many were already in place for the assault on the Isonzo Valley.

At 0800 the bombardment ceased and the attack began. Many assault units, including Rommel's, were able to work their way behind the Italian lines taking advantage of the terrain, Italian confusion, and early morning valley fog. Now the trench mortars and howitzers concentrated their fire on the Italian second position and on the machine gun nests that lay between the first and second positions. Flamethrowers belched and machine guns crackled all along

⁵³ Schindler, 252.

the upper Isonzo. Italian strong points at the top of mountains and hills were either bypassed or leveled by the advancing German and Austrian stormtroopers in a race for high ground behind the Italian positions. In classic stormtrooper fashion, the infantry rolled up behind the assault detachments filling in the gaps and taking Italian positions as they went. By nightfall of the first day, the Italians were in disarray. The Austrians and Germans continued their advance at an awe-inspiring pace. Rommel would win his first *Pour le M`erite*, the coveted “Blue Max” (Germany’s highest decoration) in his first day’s fighting.⁵⁴

Figure 19. Actual artillery bombardment on the morning of October 24, 1917.



By the morning of October 28, four days into the offensive, the Italian Army was in retreat away from the Isonzo largely due to the extraordinary efforts of the Assault Battalions and their stormtroopers. Everywhere the Italians abandoned equipment in hopes of staying alive and out of German captivity. Cadorna proclaimed the retreat “perhaps the greatest catastrophe in history,” explicitly blaming his battered soldiers for the retreat. He went on to say, “The failure to resist on the part of the Army, which cravenly withdrew without fighting or ignominiously surrendered to the enemy, has allowed the Austro-German forces to break through our left flank on the Julian front.”⁵⁵

⁵⁴ For more detailed account of the attacks on the first day see: Schindler, 243-255.

⁵⁵ Schindler, 258.

At no point did Cadorna blame the senior leadership, or himself, for the failings of October 24, 1917. By any standard, the attack by the Central Powers along the Isonzo was a success. Of the two million Italian soldiers arrayed against the Austro-German forces at the beginning of the offensive, estimates are that between 800,000 and one million had been killed, wounded, or captured. More than 3,000 guns, half of the Italian inventory, as well as 1,700 trench mortars and 3,000 machine guns were now in the enemy's hands.⁵⁶

B. THE WESTERN FRONT

By November 1, 1917 the Central Powers had reached the Piave River nearly ninety miles from their starting point. The French and British were forced to dispatch a total of eleven divisions immediately to the Italian Front to stop the German advance before it reached Venice and Padua. No longer having to worry about the collapse of the Habsburg armed forces in Italy, the Germans were able to focus exclusively on the Western Front. The problems for the Habsburgs were just beginning by the end of 1917. The death of the emperor and the strains caused by four years of war was beginning to fracture the Austro-Hungarian alliances along national lines. In less than a year, those fractures would rupture and the once glorious Habsburg Empire would unravel at its seams.

The Italians were not in an enviable position after October 24, 1917. It was as though more than half the army had vanished into thin air. Men were deserting in uncontrollable numbers, many attempted to go home, and others just fled in a direction that seemed the safest at the time. By November 20, Allied reinforcements were all that held the crippled Italian army and country together. Cadorna was sacked by the government. Soldiers were escorted back to the lines, many at the barrel of Carabinieri rifle. Others, especially officers, were shot if captured while retreating. It was a tenuous situation by all accounts. For a while, Italy was effectively removed from the war. For the Austro-German Alliance in Italy, the advance would go no further than the Piave. Fortunately, for

⁵⁶ Gudmundsson, *Stormtroop Tactics*, 137.

Italy and the Allies enough of the Italian Army remained and was able to fight with renewed vigor, mainly for survival, to stop the Austrians and Germans from advancing further.

As 1917 drew to a close and 1918 began, the German Army had enough German soldiers trained in stormtrooper tactics to encourage the General Staff, especially Ludendorff, to believe the war could finally be brought to a quick end. In the hope of causing another Caporetto on the Western Front, Ludendorff and his commanders made one of the biggest miscalculations of the war.

After Caporetto, the Central Powers were in an excellent position to press the Allies for a negotiated peace. If no further offensives had been undertaken by the Central Powers after 1917, it was unlikely that any Allied power had the support of the soldiers and the populace to continue the war much longer. The continued arrival of hundreds of thousands of American soldiers to the Western Front was the unknown factor. Germany could have continued on the defensive and probably forced a negotiated peace that even Woodrow Wilson, the American President, was calling for. Instead, Ludendorff decided to begin planning for a final knock-out punch that would remove Britain from the war and leave only an exhausted French army, and an inexperienced American Expeditionary Force. German leaders concluded, primarily because of the Isonzo victory, that their tactics were better than that of the Allies. Thus, planning for the Spring Offensive on the Western Front dubbed "Operation Michael" commenced.

Operation Michael officially began on March 21, 1918 in the British sector around Cambrai salient. The British were viewed as the weaker of the two allies left facing the German Army. The German Staff believed that if they could knock the British out before significant numbers of raw American troops entered the battlefield, the French would be forced to sue for peace. As was true in Russia and on the Isonzo, the "Peace Offensive" began with a massive artillery bombardment, including gas. The assault troops, as rehearsed in the months leading up to the massive offensive, used the bombardment as cover to move

into attack position. When the artillery lifted, the stormtroopers attacked. Many British emplacements found themselves cut off and incapable of independent action; like the Italian units at Caporetto. British forces, however, were better trained than the Italians and the Russians had been, and were able to place more accurate artillery upon the attackers. While many of the assault troops failed to reach their initial objective, they did serve to throw the defenders off balance enough to gain moderate ground on the first day.

By the second day, the slow reflexes of the British command system became evident and German advances, although slow, continued. On the third day, the Germans had succeeded in pushing eighty kilometers into the British lines. On the fourth day, however, the advance began to stall. As happened in Caporetto, the German troops were beginning to outrun their supply lines and many were seen stopping to loot British supply depots for food and basic necessities.

A key weakness in the tactics, and offensive strategy, of the Assault Battalions became apparent. Advancing troops need supply and artillery to keep the attack moving forward; especially when the enemy was falling back on his supporting lines. The German logistical system, while superior when working within the interior lines of Germany, was not as efficient outside German borders. The system was heavily reliant on railroad and horse for supply, and wasn't designed for such operations being carried out deep in Italy or beyond the Western Front. Supplies and artillery were simply unable to keep up— a problem that wouldn't be remedied until the inter-war period after WWI.

VIII. THE HARSH REALITIES OF MODERN WARFARE

*All of the armies developed shock troops, but the Germans had more of them and used them more effectively than anyone else. The amazing success of their March 1918 offensive was mostly due to the expert infantrymen employed by Ludendorff as the advance fighting force. Characterized by their ability to take advantage of battlefield opportunities, to work with one another in constructive teamwork, and to employ their weapons skillfully, such elite troops fought hard to win. ... A great tragedy of the war was the decision of all participants to employ masses of mediocre infantrymen in frontal assaults on enemy trenches. Therein lies the reason for the grim butcher's bill.*⁵⁷

- Hubert C. Johnson, in *Breakthrough*

Operation Michael succeeded in breaking through the British line, but it took three days instead of the single one planned, allowing the British to bring up significant reserves. Ludendorff wasn't dismayed by the failure of the stormtrooper tactics during this offensive and attempted three more offensives before the end of summer in hopes of defeating the Allies. The last of these, launched on August 4, 1918, lasted only four days. When it ended, not only had German troops stopped moving forward, they were now starting to retreat.⁵⁸ Italy had managed to regroup after Caporetto, and in early November 1918, counterattacked across the Piave. Much like a year earlier, the Italians were able to gain much of the territory lost in a very short amount of time. On November 11, the armistice was signed. The armies of the Central Powers were exhausted. Moreover, the civilian populations were spent, fed up with the war, its horrific casualties, and the drain on the countries resources.

The lessons of the latter two years of the war would not be forgotten by the defeated German Army. During the inter-war years that followed, many of the leaders responsible for the development and success of the assault

⁵⁷ Johnson, *Breakthrough*, 283.

⁵⁸ Gudmundsson, *Stormtroop Tactics*, 168.

battalions would identify the weaknesses within the stormtrooper tactics. They would spend the next twenty years rebuilding and remedying the limitations.

Tanks and aircraft would become key players in German reorganization. Logistics would be dramatically improved in order to support the rapid advance into enemy territory. General Hans von Seeckt would assume command in the inter-war period as Chief of the General Staff of the remaining German Army, now merely a constabulary defense force. Behind the scenes he would set the Germans on a path to rebuild the Army based on the stormtrooper model of WWI. Most importantly, Seeckt realized that the German Army's earlier failure to consider the tank and aircraft as a significant weapon was probably its greatest technological mistake.

Constrained by the Versailles Treaty, General von Seeckt broke dramatically with German military tradition by advocating the creation of a small, elite professional army based on voluntary recruitment rather than conscription. For von Seeckt, the key to future victory was mobility:

The whole future of warfare appears to me to lie in the employment of mobile armies, relatively small but of high quality and rendered distinctly more effective by the addition of aircraft, and in simultaneous mobilization of the whole defense force, be it to feed the attack or for home defense.⁵⁹

Maintaining the education and training levels of the NCO and junior officers was important in the von Seeckt plan for rebuilding, and there were plenty of quality officers and NCO's from the Assault Battalions of WWI who would serve as the backbone of an army being rebuilt on the ideas of its new Chief of Staff.

Throughout the 1920's and 1930's the German military sought to reinvent itself through the lessons of defeat in WWI. The Army developed an armor doctrine hoping to overcome the problems of logistics and distance that undermined breakthrough's of the previous war. Armor and mobile artillery would now be able to drive hundreds of miles into enemy territory. To go along with armor doctrine, the Germans also spent much energy researching and

⁵⁹ James S. Corum, *The Roots of Blitzkrieg*, University Press of Kansas, 1992, 30-31.

developing an air power doctrine. Close air support and air liaison officers were just two of the developments of the new German system. As the armor units drove deep into enemy territory, fighters and bombers would use liaison officers with the ground units to provide the close support from the air. Stormtroopers would also now be delivered by air. Paratroopers would perform the same missions as stormtroopers of the WWI Assault Battalions; but now they could be delivered hundreds of miles behind enemy strong points from the air. They could be re-supplied by air and were critical in softening up the enemy rear for the rapidly advancing armor and infantry units. The whole system was developed to create rapid mobility, confuse the enemy, and bring the offensive back to modern warfare.

Germany would first be able to test these new principles on the European continent in the mid-1930's with the Spanish Civil War. Germany and Italy supported the Fascist rebels trying to overthrow the Nationalist armies supported by British, French, and American volunteers. The tools developed by the German Army in the inter-war period would get their baptism of fire during this conflict. Nonetheless, German forces, methods, and equipment didn't impress outside observers or actually influence the outcome of the Spanish Civil War. In fact, they performed rather poorly by German standards. What the Spanish Civil War did was give the Germans a live fire exercise in the principles they were developing over the last fifteen years. Given this data, the German military would refine the processes and fix the problems quickly.

By the spring of 1940, just two years after the Spanish Civil War ended, the fate of Belgium and the defense of Northern France once again rested on a series of fortresses along the German-Belgium border. These concrete fortresses, known collectively as the Maginot Line, were modern in design and equipped with artillery of all calibers, antitank guns, and machine guns. They dominated the surrounding landscape. Infantry attacks on these fortresses, of the kind attempted during WWI, would have been suicide. Air bombardment would have done, as they were mostly underground and hardened to an unprecedented degree.

The strongest and most strategic point for German planners was the fortress at Eben Emael. On May 1, 1940 the Germans attacked the fortress. Using shell holes made by their artillery the night before, German engineers crept forward to the base of the fort. When the sun rose on May 1, flamethrowers and shape charges went into the cupolas defending the fort. Simultaneously, a glider force landed and joined in the fight. This attack had been rehearsed numerous times in Germany against a scale model of Eben Emael. The rehearsals allowed the forces involved in the intricate plan to perfect the complex timing of the operation.

The attacking element was not a division, or even a regiment. The attack did not include one heavy bomber or fighter aircraft. There was not one single tank in the operation. The fortress was taken in classic stormtroop and assault battalion form; with one battalion of combat engineers acting in concert with a glider-borne engineering platoon. By the end of the morning the fort was defenseless and surrendered. German forces poured through the hole in Belgium, and through the lightly defended Ardennes into France and Holland. The vision of Schlieffen more than thirty years earlier had been fulfilled.

Despite volumes of available material about the First World War, historians writing in languages other than German largely ignored the great campaigns from Italy and the East – especially the Allies. Historian Bruce Gudmundsson further explains in his book *Stormtroop Tactics*:

The lack of source material was not what prevented adequate coverage of stormtroop tactics. The handicap that prevented adequate coverage of stormtroop tactics was twofold ... First, military writers were mostly products of the French approach to tactics. Seeing tactics as an exercise in engineering, these writers were looking for the formula for German tactics in WWI – how many guns per yard of front and how many waves of infantry per battalion.⁶⁰

⁶⁰ Gudmundsson, xv.

France, Britain, and America all underestimated the German program to rebuild and replenish after WWI. Most in the Allied camp assumed that if war broke out in Europe again, it would look very similar to the warfare of WWI. They couldn't have been more wrong. Gudmundsson again points out:

Thus, they missed the intangibles – the social relations between officers, NCO's and men – that were the essence of stormtroop tactics. Second, like all members of their generation, military writers were affected by wartime propaganda, which depicted the Germans as heartless automatons who were as incapable of independent action on the battlefield as they were of human feeling. That such "Huns" were capable of the most fluid infantry tactics of the war would be a difficult proposition for such writers to swallow.⁶¹

Misunderstanding one's enemy has been a problem plaguing military planners and professionals, not only leading up to WWI, but through the Inter-War period and into WWII, Korea, and Vietnam. Surely similarities can even be drawn with operations occurring today in Afghanistan and Iraq.

The rest of the world was forced to recognize in the early months of WWII, that German units were capable of independent action on the battlefield. Fortunately, the Allied armies caught on quickly and began to modernize and adapt to the German model. In the process, they adopted many of the German innovations. The German *Blitzkrieg*, or "lightning war," and forms thereof, would soon become standard practice in the ground, air, and sea doctrines of all modern armies – most notably the Americans.

⁶¹ Gudmundsson, xv.

THIS PAGE INTENTIONALLY LEFT BLANK

IX. CONCLUSION

*The crucial decisions for the Germans that resulted in their battlefield triumphs early in World War II came in the immediate aftermath of World War I.*⁶²

- Williamson Murray and Allan R. Millett,
in Military Innovation in the Interwar Period

Many of the tactics used in the blitzkrieg tactics of WWII were born in the final years of WWI and the Interwar Years that followed. The specific tactical operations involved in the German *Blitzkrieg* were developed in the 1920's. Unlike other Western armies, such as the British who did experiment with advanced tactics but never incorporated them, the Germans learned to ignore the continuous line of attack strategy. Examples of the new German *Blitzkrieg* tactics were readily visible in the support provided the Fascists during the Spanish Civil War.

When war erupted in 1939 and 1940, most Western armies fell back on the outdated doctrine and tactics of WWI – defense. In contrast to other armies, the German Army carried out a systematic study of the lessons of WWI and instituted the lessons, successfully charted the course of future warfare. The rest of the world was forced to play catch up.

The German Army stunned the world with the rapid and devastating invasions, and defeats, of European powers Poland and France. Utilizing new tactical innovations developed and tested during the inter-war period between WWI and the onset of WWII, Germany managed to revolutionize the combat warfare that would follow. Combining quick-strike armored and infantry divisions, close air support, and logistical support, the German military was able to drive deep into Polish and French territory. Isolated and surrounded, the Polish and French militaries were helpless to stop the German advance. What had become

⁶² Williamson Murray and Allan R. Millett, *Military Innovation in the Interwar Period*, Cambridge Press, 1996, 35-36.

known as *Blitzkrieg*, or “lighting war,” would now become the tactical model for any conventional military hoping to succeed on the field of battle for the next half-century.

In 1950 on the Korean peninsula, United Nation (U.N.) forces desperately needed to break out from the stalemate that had developed around the South Korean city of Pusan. In a brilliant move, U.N. forces (mainly United States.) conducted a series of landings along the west coast of South Korea far north of North Korean forces; the most notable being the landings at Inch'on. Security, simplicity, speed, and combined naval and air support allowed numerous armored and infantry divisions to come ashore. Once ashore, the combined forces pushed deep into the Korean mainland behind the majority of North Korean forces, still surrounding Pusan. North Korean forces were now isolated and cut-off from command and supply lines. The U.N. forces around Pusan were then able to break out and force a hasty North Korean retreat.

In late October 1956, Israeli forces invaded the Gaza Strip and Sinai Peninsula. Using surprise and operational security, Israeli armored and infantry forces advanced quickly towards the Suez Canal zone. Egyptian forces fought bravely but couldn't withstand the initial coordinated onslaught of air, naval, and land forces Israel, and her allies (Britain and France), threw against them. While a political disaster for all involved, militarily it was a tremendous success for Israel. The elements of the German *Blitzkrieg* tactics, surprise, security, violence of execution, and combined arms tactics ensured quick military success.

Looking ahead almost forty years to the end of the Cold War, during Operations DESERT STORM, in January 1991, and IRAQI FREEDOM, in April 2003, the United States military achieved overwhelming, and tremendously lopsided, victories against Sadaam Hussein and his forces. Both U.S. offensives combined the superior technological and tactical innovations of the late 20th Century in order to quickly, and violently, defeat the Iraqi enemy. Individual air, land, and naval forces fought as what appeared to the enemy as a single coordinated force. In both offensives speed, surprise, operational security, and

violence of execution thus allowed air, land, and naval forces to rapidly break through the initial resistance. Once behind enemy lines, ground forces rapidly moved deep into the enemy rear. Isolated and cut off from their command and control, the remaining pockets of Iraqi resistance became easy targets for follow-on air strikes and supporting U.S. ground forces. The U.S. had achieved tactical victory, not in weeks and months, but in days. Yet in the end they had only practiced the orthodox. Operation IRAQI FREEDOM had only begun. The enemy began waging an insurgency and the U.S. military, led from above, could not adapt rapidly.

In the future, the lessons of WWI, Caporetto, and the German model for innovation and infiltration tactics can, and should, be utilized against the enemies of the United States. The weaknesses of the U.S. military are also its greatest strength; its reliance on technology, mass, and bureaucracy. The enemies of tomorrow are developing “infiltration tactics” today. From the lowest levels of command, small units pass through friendly lines and attack the soft rear, with improvised explosive devices and other anti-personnel weapons. To accomplish this infiltration the enemy will not only use traditional maneuver tactics, but the vast information realm known as cyberspace.

Moreover, the adversaries know that if they can't be seen, they can't be easily struck. Blending in to the civilian population and information realm gives the enemy a stealth capability as well as a propaganda advantage when innocents are caught in any crossfire. Innovation in the enemy system does not come from the top down as much as it comes from the bottom up. The senior leadership becomes the primary targets in any attack from a conventional military today. Therefore, enemies must decentralize much of their operations to the lowest possible levels in order to have any prolonged success. What is seen, and will be seen, is a continued decentralization of enemy operations in order to develop and train a new “younger” generation of fighters; the current version of the junior officer and NCO.

German advances in WWI didn't bring strategic victory, but lead to the development of a tactical doctrine twenty years later that did bring strategic victory. Only when the rest of the world began listening to troops on the ground, and began instituting their lessons, was the German advantage checked. It is time to start listening again – the enemy is again gaining the tactical advantage.

APPENDIX A

The names of many of the towns, cities, mountains, and rivers used in this thesis have changed many times since 1918. This study attempts to use the names of the places as they would have been in 1918. That has produced a unique mix of German, Italian, and Slovenian usage. The languages of the region, being as diverse as the place names, have several unique pronunciations that may be unfamiliar to the Standard English speaking reader. Included here are some of the unique grammar quirks that come with specific languages, especially Slovenian.

A. PRONUNCIATION

1. **“i”** – In Slavic, “i” is pronounced with the long “e” of English. For example, *Kobarid*, is pronounced “ko-bar-ee-d.”
2. **“e”** – In Slavic, “e” is pronounced with the long “a” of English. For example, the Slovenian word for “red” – *rdeč* – is pronounced, “rr-day-ch.”
3. **“j”** – In Slavic, “j” is pronounced like the “y” in English, but not as the vowel usage. For example, the capitol of Slovenia, “*Ljubljana*,” is pronounced, “L-yub-l-y-ana.”
4. **“o”** – In Slavic, “o” is pronounced with the long “o” of English, i.e., “oh”. For example, “*Kobarid*” or “*Soča*” would be pronounced “K-oh-bar-ee-d,” or “Sow-cha.”
5. **Č** – In Slavic languages, this is pronounced like the “ch” in English. Ex: *Soča*, pronounced: So-ch-a.
6. **Ž** – Pronounced as “zh.” The second “g” in *garage* is a good example.
7. **Š** – Pronounced as “sh” in English. *Vršič*, pronounced: Ver-sh-ee-ch.
8. **“c”** – Pronounced like “c” in English *city*.
9. **ü** – Pronounced in German as the long “u” in English, i.e., “you.”

B. PLACE NAMES

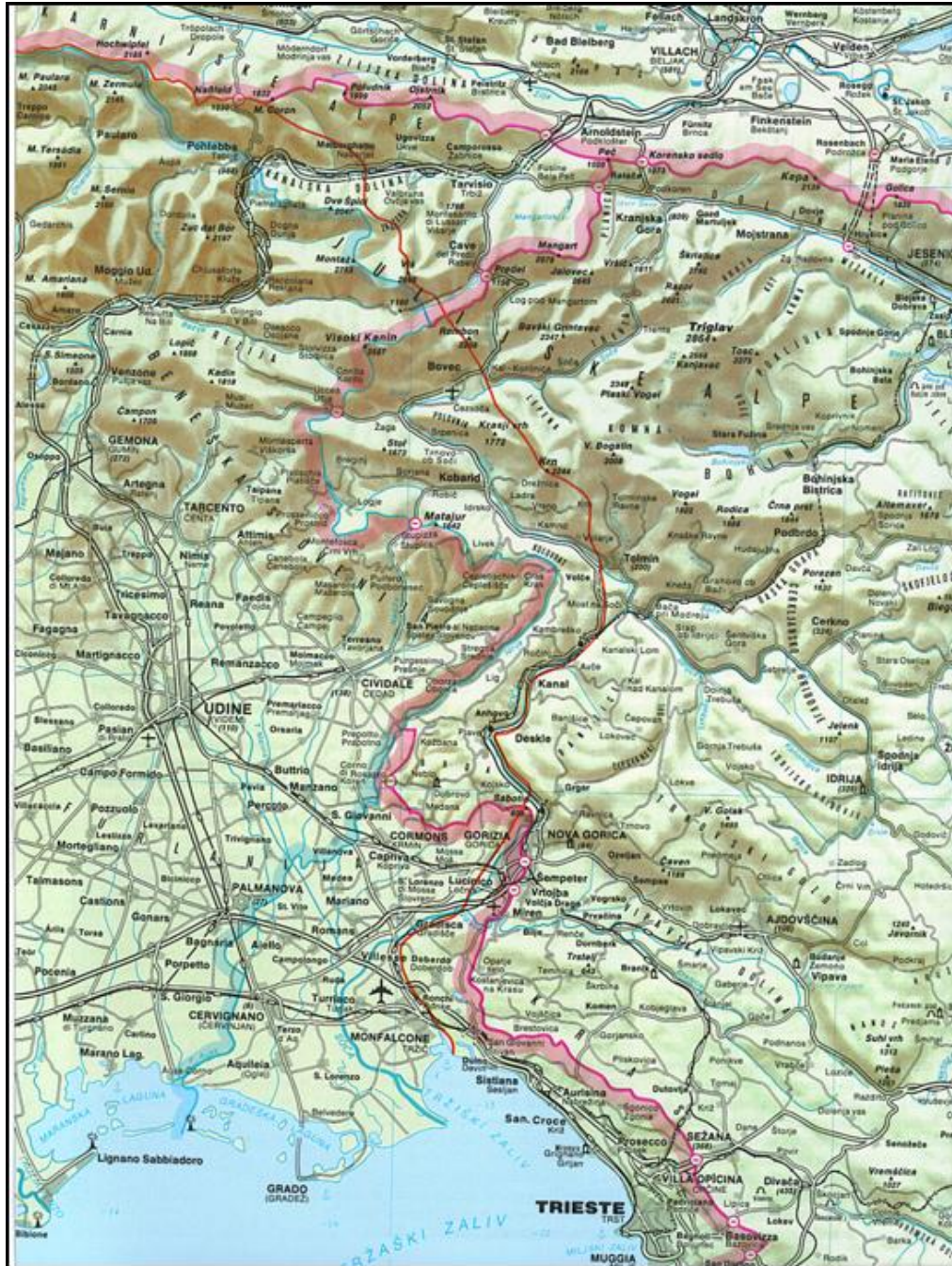
* Represents the name most often referred to today.

<u>GERMAN</u>	<u>ITALIAN</u>	<u>SLOVENIAN</u>	<u>(PRONUNCIATION)</u>
1. Flitsch	Plezzo	* Bovec	(bow-vets)
2. Karfreit	Caporetto	*Kobarid	(ko-bar-eat)
3. Tolmein	Tolmino	* Tolmin	(toll-mean)
4. * Mt. Krn	Mt. Nero	* Mt. Krn	(kirn)
5. Isonzo	Isonzo	* Soča	(sow-cha)
6. Laibach	* Ljubljana	* Ljubljana	(lu-bee-ya-na)
7. Triest	* Trieste	* Trst	(tirst)
8. * Wien	* Vienna	Dunaj	(dew-ni)
9. St. Lucia	St. Lucia	* Most na Soč	(most-na-soch)
10. Görz	* Gorizia	* Nova Gorizia	
11. Luico	Luico	* Livek	(lee-veck)
12. Bainsizza	Bainsizza	* Banjšice	(Ban-yish-say)
13. N/A	Capodistria	* Koper	(cope-er)
14. N/A	Doberdo	* Doberdob	(dober-dobe)
15. Pola	Pola	* Pula	(pool-a)
16. Canale	Canale	* Kanal	(canal)
17. Fiume	Fiume	* Rijeka	(ree-yay-ka)
18. Sabotino	Sabotino	* Sabotin	(sa-bo-teen)

APPENDIX B

A. MAPS

1. Present Day Isonzo Valley:



2. Isonzo Front 1915 – 1918:



WHITE AREA: Italian territory 1915

TAN AREA: Austro-Hungarian Territory 1915

SOLID RED LINE: Furthest Advance of Italian Army in 1917

BROKEN RED LINE: Furthest Advance of German-Austrian Army 1917-1918

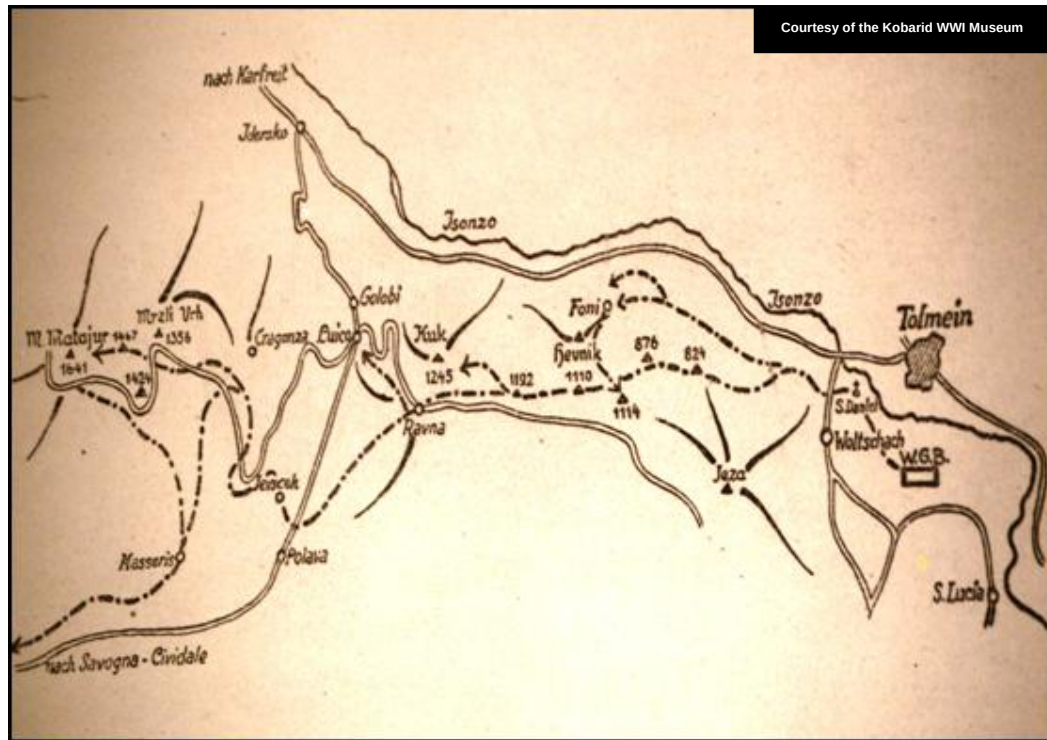
* Most of the Austro-Hungarian territory on the map was awarded to Italy in the Treaty of Versailles following the end of WWI.

3. Disposition of Forces along the Isonzo 1915 – 1917:



- The dotted blue lines show the initial positions of the Austro-Hungarian divisions in 1915.
- The solid blue lines represent the Austro-Hungarian positions before October 24, 1917

4. Movement of Württemberg Battalion October 24, 1917.



APPENDIX C

A. THE BATTLEFIELD TODAY

For those interested in touring the battlefields of the Twelve Isonzo Offensives, the area is easily accessible. Major U.S. and European airlines operate regular flights into Venice, Trieste, and Ljubljana. The country of Slovenia is part of the European Union and a member of NATO. With a passport and a very good pair of hiking boots, touring the battlefields of the Italian Front can be very rewarding. Many of the locations still look today as they did ninety years ago, when war first came to the region. The people of the region are hospitable and friendly, and most speak a combination of languages; including English, Italian, German, and French.

The Soca Valley, and most of Slovenia, is an outdoor enthusiast's paradise. With miles of hiking trails, paragliding, kayaking, bicycling routes, and fishing of all kinds, there is plenty to do to keep anyone dutifully occupied.

For historians, the locations of the major battles are not difficult to find. One only needs a good map and a keen eye. Most of the locations are not off limits, and some appear as if the war had ended a few days ago. From the Julian Alps in the north to the Carso in the South, most are accessible by either auto or foot. Mounts Rombon, Krn, Javorca, and Mrzli Vrh are difficult hikes, but the reward is worth the effort. Many trenches, caverns, and artifacts still remain along the paths and at the peaks. Many of the paths used to reach the peaks today are those that were cut almost a century ago by the soldiers attacking and defending these locations.

A good place to start is in the town of Bovec. It sits under the shadow of Mt. Rombon where some of the bloodiest and fiercest fighting of the entire war took place. It is where Mussolini first experienced the horrors of the Great War. There is a small private museum in the town, and a number of historical monuments to see in the area. Hiking Mt. Rombon is arduous and can be

dangerous since its peaks are generally snow covered all year round. It is recommended that only experienced climbers and hikers make a run at its peaks. Moreover, there are still unexploded ordinance and deep caverns at its summit. If interested, there are hiking groups that semi-regularly hike the mountain. Moving south from Bovec, the next stop is the quaint and quiet town of Kobarid.

Kobarid contains probably the best and only true World War I museum in the region. It received the European Community's award for European Museum in 1993. The staff is very helpful and the museum is really first rate. It should be the first stop in any tour of the Soca Valley. The museum has numerous maps, books, and videos describing the terrible fighting that went on in the high Julian Alps; including hiking maps for those so inclined. Also in Kobarid is an Italian ossuary. The memorial was opened by Mussolini in 1938 and bears the remains of more than 7,000 Italian soldiers who fell between Mt. Rombon and the town of Tolmin further south. From the ossuary a wonderful view of the town and surrounding valley can be seen.

Continuing down the valley is the town of Tolmin, the county seat for the region. The town never fell to the Italian armies and is surrounded by a plethora of wonderful monuments. Located directly along the emerald green waters of the Soca River, Tolmin is an excellent place to stop and spend a day. Along the rivers edge is a walled German ossuary where the remains of the German soldiers from the final offensive are buried. Near Tolmin, under the heights of the Mrzli ridge at Javorca lies the beautiful Church of the Holy Ghost, another difficult hike but the payoff is well worth the effort. The church was built by Austrian soldiers in 1916 in honor of the 3rd Mountain Brigade and the soldiers who died defending the Mrzli ridge. The interior is lined with wood panels and the names of the dead, painted in black. It is finished in bright blue tones and wonderfully pristine marble. The church is not only moving, but one of the best preserved monuments along the Isonzo. Below and behind the church in the cow pastures are numerous remnants of the Austrian army that occupied the valley. Bunkers,

monuments, and ruins line a small country road leading away from the chapel and Tolmin. It is an interesting glimpse into the life of soldiers behind the front lines and the defenses they built.

Continuing down the road from Tolmin, the Bainsizza Plateau rises in the foreground. Along the road, and in many of the small towns, are caverns, cemeteries, and monuments to the soldiers and units who fought here. On the other side of the Bainsizza is the city of Gorizia. What was Gorizia in WWI is now two cities: Gorizia, on the Italian side of the border, and Nova Gorizia, or “new” Gorizia on the Slovenian side. The town was virtually split by the Iron Curtain after WWII and thus the two names. On the Slovenian side is Mt. Sabotino, Mt. San Gabriele, and Mt. Santo. The holy pilgrimage site of Sveta Gora, destroyed by Italian artillery in the early years of the fighting, stands at the peak of Mt. Santo. The site is maintained by the Slovenian government and also has a museum dedicated to the fighting that went on around Sveta Gora.

Gorizia is a cosmopolitan Italian city, but it does have a museum located in the center of the city with numerous rooms and displays highlighting the fighting that defended the city. Located on a hill in the center and next to the castle that dominates the landscape, the museum provides a spectacular view of the surrounding countryside and Julian Alps.

South of Gorizia, where the Isonzo makes its final jaunt before emptying into the Adriatic, is the Carso. Near the town of Redipuglia is another immense Italian ossuary with the remains of more than 100,000 Italians. The ossuary overlooks the Carso and delivers a sobering view of the rocky hills that cost so many Italian and Austrian soldiers their lives. Within the grounds of the ossuary is a museum dedicated to the 3rd Army, an impressive outdoor museum with all of the artillery used by the Italians in WWI, and a reconstructed stone trench; a remnant of the 1915 fighting for Mt. Sei Busi.

The Soča Valley today is wonderfully preserved and picturesque. Visiting the Isonzo Front is an experience that will last a lifetime, and an honor to those who gave their lives so that it won't happen again.

THIS PAGE INTENTIONALLY LEFT BLANK

BIBLIOGRAPHY

- Corum, James S. *The Roots of Blitzkrieg: Hans von Seeckt and German Military Reform*. Lawrence, KS: University Press of Kansas, 1992.
- Duffy, M. *The Italian Front. The First World War, The War to End all Wars*. 2000-2006. Retrieved January 25, 2006 from <http://www.firstworldwar.com/battles/if.htm>.
- Foley, Robert T. *German Strategy and the Path to Verdun: Erich von Falkenhayn and the Development of Attrition, 1870-1916*. Cambridge University, UK: Cambridge University Press, 2005.
- Galli, Richard, "Avalanche," *Le Grande Guerra*, 2000-2001. Journal online. available from <http://www.firstworldwar.com/battles/caporetto.htm>; Internet; accessed 13 October 2006.
- Giese, Jon F. *Military Innovation: Sources of Change for United State Special Operations Forces*. Masters Thesis, Monterey, CA: Naval Postgraduate School, 1999.
- Goldman, Emily O. & Eliason, Leslie C. *The Diffusion of Military Technology and Ideas*. Stanford, CA: Stanford University Press, 2003.
- Gudmundsson, Bruce I. *Stormtroop Tactics: Innovation in the German Army, 1914 – 1918*. Westport, CT: Praeger Publishers, 1989.
- Hammes, T.X. *The Sling and the Stone: On War in the 21st Century*. Zenith Publishing, 2004.
- Hemingway, Ernest. *A Farewell to Arms*. New York, NY: Scribner, 1929.
- Hennessy, Michael A. & McKercher B.J.C. *War in the Twentieth Century: Reflections at a Century's End*. Westport, CT: Praeger Publishers, 2003.

- Johnson, Hubert C. *Breakthrough: Tactics, Technology, and the Search for Victory on the Western Front in World War I*. Novato, CA: Presidio Press, 1994.
- Kobarid Museum (Producer). *The Great War in the Soca / Isonzo Valley* [movie]. Kobarid, SLO: Kobarid Museum.
- Lieber, Keir A. "Grasping the Technological Peace, the Offense-Defense Balance and International Security." *International Security*, Vol. 25, No. 1, Summer 2000, 87.
- Lewis, John E. *The Mammoth Book of Eyewitness World War I*. New York, NY: Carroll and Graf Publishers, 2003.
- Macgregor, Douglas A. *Breaking the Phalanx: A New Design for Landpower in the 21st Century*. Westport, CT: Praeger Publishers, 1997.
- . *Transformation Under Fire: Revolutionizing How America Fights*. Westport, CT: Praeger Publishers, 2003.
- Mahnken, Thomas, G. *Uncovering Ways of War: U.S. Intelligence and Foreign Military Innovation, 1918-1941*. London, UK and Ithaca, NY: Cornell University Press, 2002.
- Marling, R. *Effective Military Innovation: Technological and Organizational Dimensions*. Masters Thesis. Monterey, CA: Naval Postgraduate School, 2002.
- Marshall, S.L.A. *World War I*. Boston and New York, NY: Houghton Mifflin Company, 1964.
- McRaven, William H. *Spec Ops, Case Studies in Special Operations Warfare: Theory and Practice*. New York: Ballantine Books, Presidio Press, 1995.

- Morselli, M. *Caporetto 1917: Victory or Defeat*. London & Portland, OR: Frank Cass Publishers, 2001.
- Murray, W. & Millett, Allan R. *Military Innovation in the Interwar Period*. Cambridge, UK: Cambridge University Press, 1966.
- Newland, Samuel J. "Victories are not enough: Limitations on the German Way of War." *Strategic Studies Institute*, 2005. Retrieved December 15, 2005, from <http://www.StrategicStudiesInstitute.army.mil/>.
- Rommel, Erwin. *Attacks*. Provo, UT: Athena Press, Inc (*Attacks* was first published in 1937 in Germany under the title *Infanterie Greift An*), 1979.
- Schindler, John R. *Isonzo: The Forgotten Sacrifice of the Great War*. Westport, CT: Praeger Publishers, 2001.
- Simič, M. *Po Sledih Soške Fronte*. Ljubljana, SLO: Založba Mladinska knjiga, 1996.
- Svoljšak, P. *The Front on Soča*. Ljubljana, SLO: Cankarjeva založba, 2002.
- Wilson, James Q. *Bureaucracy*. Basic Books, 1989.

THIS PAGE INTENTIONALLY LEFT BLANK

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
Ft. Belvoir, Virginia
2. Dudley Knox Library
Naval Postgraduate School
Monterey, California
3. Professor Robert O'Connell
Naval Postgraduate School
Monterey, California.
4. Professor Kalev Sepp
Naval Postgraduate School
Monterey, California.
5. Professor Gordon McCormick
Naval Postgraduate School
Monterey, California
- 6.
7. Gospod Željko Čimprič
Kobarid World War I Museum
Kobarid, Slovenia
8. AFIT/ENEL
Bldg 16 Room 120
Wright-Patterson AFB, Ohio
9. USAFSOS
Student Support Staff
Hurlburt Field Florida