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Klotzen, Nicht Kleckern (Strike Together, Not Divided!): the Panzer Divisions As New Dominating Strategy of Modern Warfare

Stefano Alianelli
The College of Wooster, SAlianelli13@gmail.com

The College of Wooster

“Klotzen, Nicht Kleckern!”

(Strike Together, Not Divided!)

The Panzer Divisions as New Dominating Strategy of Modern Warfare

by

Stefano Alianelli

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Hayden Schilling

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Introduction

The opening years of the Second World War startled Europe after the flames of war were rekindled by an unbelievably rapid triumph of the German Army through the use of a new type of warfare in which the Panzer divisions played a primary role. The Panzer divisions delivered a devastating blow to the Polish and French armies because they were developed as a military force that, with revival of mobility through mechanization, was able to overcome the static fighting conditions present in the previous World War, where massed armies held their ground along trench lines and received great losses instead of advancing and inflicting any damage to the opposing army.

The name "Panzer division" is interpreted as a military division composed of tanks, but although it is true that German tanks made up the main body, these divisions as a whole included a range of different forces like infantry, artillery, anti-tank and anti-aircraft weapons which, through mechanization, became mobile and advanced together while supporting each other through close coordination. By moving and massing all these units together at a point of attack in the enemy line, a Panzer division was able to break through as the tanks rolled through the enemy's position under the cover of the supportive fire from combined elements.

This was the strategy created by the father of tank warfare General Heinz Guderian, and his personal experience reveals that the development of the Panzer divisions was originally opposed by many German commanders in the German General Staff and it was only later accepted due to its countless successes in Poland and France. His experiences in the First World

War made him realize that there was a definite need to change the old and failing static military strategy which did not appear to be bringing much success to either side. He saw great potential in the tank at the end of the Great War. Tanks had the potential to bring an end to a stalemate and restore mobility, something which in previous years was the answer to victory on the battlefield. It is true and known that Germany was not the only country in Europe to have tanks at the time, but German tank divisions were successful in the early years of World War II not because tanks were widely used, but because of how they were used. Guderian strongly argued that tanks should be massed together for an attack and that they should not be divided as individual support weapons among the infantry; from this his quote "Klotzen, nicht Kleckern!", or "strike with the tanks grouped together, do not scatter them!" best embodies the ideology behind his brilliant strategy.[1]

Because during the last years of the Great War tanks had been known to fail on multiple occasions, many traditionalist military thinkers were further discouraged from using these sluggish behemoths. Guderian's strategy was widely debated and for a while rejected by a vast majority of military thinkers during the inter war period. Larry H. Addington argues that the debate over tank warfare caused much argument within the German General Staff and the acceptance of such a strategy was quite a struggle. As tanks began to improve from the older models used in World War I and started to demonstrate much potential when used in formations during training exercises, support for Guderian increased as more generals favored the creation of Panzer divisions. When Hans von Seeckt began to modernize the German army through mechanization so that it could mobilize fast enough in case of an enemy attack, Guderian found the opportunity and support to reconstitute mobile elements of the army from a defensive role

[1] Heinz Guderian, *Panzer Leader* (Washington: Zenger Publishing Co., 1979), 18-25.

into one of a self-supporting force capable of bringing the attack to the enemy. Guderian developed the strategy for a modern military force that revived the old victorious German battle doctrine of "Kesselschlacht", or "war of encirclement and annihilation", which through speed was destined to outmaneuver the enemy army, encircle it, and destroy it as fast as possible.[2]

Guderian's strategy prevailed in the end and was a main factor that completely reshaped the strategic approach of the Wehrmacht. But just as the debate for the use of tank divisions dragged on in Germany, similar mentalities of strategists among the Allied nations like France and Great Britain also wanted to advocate for the use of the tank as an offensive weapon used in formation. However this mentality did not prevail in these countries as it did in Germany, and the failure of the French and British General Staffs to appreciate German armor strategy lead to their eventual downfall within the first few days of fighting. The experience of the Polish campaign proved that the Panzer divisions were indeed successful, but the Allies ignored this evidence because the Polish Army was much weaker and a German attack in the west against a much stronger army like that of the French was thought to inevitably fail. If tank strategy was adopted by France and Great Britain, the war may have had a very different outcome.

Unfortunately there were very few officers on the Allied side who understood the potential and might of the German Panzer divisions. Some, like Major F.O. Miksche who encountered first-hand the first tank prototypes during the Spanish Civil War, saw what massed tanks in a division were capable of doing as early as the days of the Spanish civil war. His observations on the German strategy used during the campaigns in Poland and in France made him one of the few Allied officers capable of realizing the advantages of the Panzer divisions.

[2] Larry H. Addington, *The Blitzkrieg Era and the German General Staff, 1865-1941* (New Brunswick, N.J.: Rutgers University Press, 1971), 4.

His observations on the flaws of the Allied defense reveal some of the many aspects which the German strategy was able to exploit and overcome. The stubbornness of the British military to listen to officers like Basil Liddell Hart and John Frederick Charles Fuller who, argued that tanks should be massed together even before Guderian, made sure that the Allies were unprepared when the attack finally came.[3] The failure of the Allies to appreciate German strategy astonished many officers who participated in the campaign. Friedrich von Mellenthin noticed the weaknesses in the enemy's defense of Poland and was perplexed by the Allies' inability to learn from the campaign and apply a better strategy to the defense of France.[4]

The creation of the Panzer divisions reintroduced mobility to the German army and a reanimation of the war of maneuver. The advantage of maneuverability was truly proven successful in France against the French and British armies who were a much more formidable foe than the Poles. When the Germans attacked France in May of 1940 the mobile Panzer divisions clashed with a type of defense which military historians like Alexander Belvin claimed to be the product of an opposite strategy known as static warfare. Static warfare survived the First World War and implemented those same principles that lead to a war of position. Such an old ideology was embodied through the construction of the Maginot Line which followed the old concept of reinforcing what portion of land was held and, through a fortified defense, exhaust the enemy to then counterattack. However, the old strategy collided with the modern and was rendered obsolete in a matter of days. The advance of the Panzer divisions in combination with

[3] Ferdinand Otto Miksche, *Attack, A Study of Blitzkrieg Tactics* (New York: Random House, 1942), 19.
[4] Major General F. Mellenthin, *Panzer Battles, A Study of the Emplyoment of Armor in the Second World War*, trans. H. Betzler (Norman and London:University of Oklahoma Press, 1977) , 24.

coordinated air strikes was so fast that the name Blitzkrieg had to be coined by the Allies in order to label the series of continuous defeats inflicted by the rapid German advance.[5]

The purpose of this research is not to retell the story of the German advance through Europe in the first two years of the Second World War, but to look at the Panzer divisions as the driving force responsible for the successful execution of these campaigns. The Germans lost the war in the end, but this is not to say that the strategy adopted was a failure: Guderian's strategy of massing tanks and supportive elements together was indeed successful, and it was this very same revolutionary strategy that was adopted by the Allies and turned against the Germans who were the first to master it. The strategy of the Panzer divisions deserves recognition as an ideal fighting force which by a military point of view can be considered as an innovative success and has indeed worked. How Germany's mechanized divisions spearheaded the attacks in Poland and France remain the foundations for all tank warfare, being that the Allies were not the only ones to benefit from this strategy when they turned it against the Germans, but every army from the end of World War II to today who has ever used tanks is inevitably connected to these tactics and their use in the early years of the war.

[5] Alexander Belvin, *Inside the Nazi War Machine: How Three Generals Unleashed Hitler's Blitzkrieg upon the World* (New York: New American Library, 2010), 6.

Chapter One

Heinz Guderian

And the Birth of the Panzer Division

The twentieth century was an extremely important time for the evolution of modern warfare and the introduction of new tools of war. The last one hundred years have been important to the creation and use of advanced military technology ranging from advanced automatic weapons to the development of projectiles. However, there is no bigger misconception than thinking of modern warfare as the birth place for new weapons, where such tools of war just "happened to be invented". Everything that is created in warfare is the product of responses directly related to the improvement of past doctrinal and strategic policies, which require continuous modifications and improvements before the enemy is able to catch up and pose a threat. It was this very same phenomenon that occurred in Germany during the 1920s and 1930s, or the time period commonly referred to as the "Inter War Period" by post World War II historians. These years saw the creation of the notorious Panzer divisions which literally spearheaded Germany's attacks in Poland and France.

The creation of the Panzer divisions during the Inter-War period was not a simple process; it was in fact a highly debated issue which was met with much criticism in Germany. It is important to understand that during these years many military experts around Europe were still astonished by the "progression" of the First World War into a war of position which originated from the unbreakable stalemate that was trench warfare. Any military thinking that took place

during these years was a response to the long series of failed initiatives which saw little to no victory along the Western Front. The idea of never having to repeat a war of attrition in the future became the point of focus among military thinkers, who recognized the loss of mobility on the battlefield as the main culprit behind the stalemate. The need to regain mobility on the field was a topic of great debate and was answered by a variety of solutions. It was only a handful of wise military men who argued that the best way to regain mobility in warfare was the tank. Although the appearance of these bright military thinkers and officers was spread throughout Europe, it was in Germany that after many years of struggle the tank was able to see the light as a center piece of modern warfare.

Mobility in the field, however, was not an entirely new concept of warfare, for it was mobility which made wars in the past successful and quick. German thinkers during the Inter-War period learned much from the past and looked to older military doctrines which could be brought up to date with the needs of the modern battlefield. Some of these doctrines date all back to the days of Carl von Clausewitz and were used in the Franco Prussian war during the wars of German unification which ended in 1871. When taking into consideration a military genius such as Clausewitz it is important to realize that although he died in 1831, well before the Franco-Prussian war ever began, his military thinking of the offensive nature was innovative and should have been closely followed: the only condition required is the need to keep up with modern technology. Clausewitz strongly supported the offensive battle, giving little support to defensive tactics. He argued that defensive operations are an unnecessary evil which should only be used in supporting the offense.[1] Defense is only applicable if there is a need to wait for

[1] Karl Von Clausewitz, *On War* (New York: The Modern Library, 1945), 507.

reinforcements, ammunition or for the troops to catch their breath. Everything revolves around the attack where "the chief characteristic of the offensive battle is the maneuver to outflank or envelop, and therefore to gain the initiative as well". It was this nineteenth century concept which took the name of "Kesselschlacht", meaning battle of encirclement or annihilation.[2] Clausewitz argues that it is important for the attacker to not give up these advantages and that he should be well supported by tactics "because the defense has a means of counter-acting them". In other words, once an attacker is successful in creating encirclements or a flank movement, it is imperative to sustain those maneuvers with mobility before the enemy has a chance to counter.[3]

The war of encirclement and annihilation (Kesselschlacht) became more successful with the appearance of new technology. The experience of the American Civil War for example developed and made use of two important elements relative to nineteenth century warfare: the telegraph and the railroad. Although many in the German General Staff never paid much attention the American Civil War, the employment of the telegraph and railroad allowed progress in both communication and mobility. The telegraph became important because it made communication between commanders and officers much faster. Before the telegraph, most orders were delivered through couriers. The United States War Department recognized the value of the telegraph and used it at the very beginning of the war in May 1861, and created over four thousand miles of telegraph lines. Orders among the Federal army normally took days to reach military commanders, but after the use of the telegraph orders and reports of enemy positions and maneuvers were transmitted almost at the speed of real time communication. The important use

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[2] Addington, *The Blitzkrieg Era and the German General Staff, 1865-1941*, 5.

[3] Clausewitz, *On War*, 510-515.

of the railroad added even a larger advantage to Federal mobility. Railroads were faster than wagons hauled by animals, which also required food to feed them. Fresh troops and supplies could reach the front in a short period of time without being worn out Both Confederate and Union armies were of considerable size and needed larger amounts of supplies and reinforcements; the railroad was the only method to provide a constant flow of such a large supply line. Railway mobility was also deployed as a means of troop operations. Armies could use the railroad to quickly reach a retreating enemy before it regrouped, or by a retreating army to escape an inevitable onslaught and regroup.[4]

The success of the railroad and the telegraph was a huge step forward in mobility and was used by European nations such as Prussia. The Franco Prussian war was one of the most important examples of the adaption of modern technology to already existing war principles like those of Clausewitz. It was at the battle of Sedan in 1871 that the Prussian forces lead by General Helmuth von Moltke overwhelmed the French army under Napoleon III by effectively using the telegraph to coordinate attacks and the railroad to quickly send fresh troops and supplies to the front. Railroad and telegraph were coordinated with the advancements of the Federal army through Confederate lines. Steven D. Jackman argues that one of the centerpieces for victory in the Franco Prussian war was in fact the abandonment of old conservative military doctrines which fit into modern technology. These were particularly effective against the French army which instead of attacking chose to maintain a defensive position.[5]

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[4] Major Richard D. Moorehead, "Technology and the American Civil War," *Military Review* (2004): 63.

[5] Steven D. Jackman, "Shoulder to Shoulder: Close Control and Old Prussian Drill in German Offensive Infantry tactics, 1871-1914," *The Journal of Military History* 68 (2004): 83-85.

The Moltke strategy of encirclement which succeeded in the Franco Prussian war was adopted by future military commanders like Alfred von Schlieffen in order to maintain the strategic advantage in case of a French attack. This major tactic of encirclement was the dominant thinking among the German General Staff in the years preceding the First World War. The plan was developed in 1906 by Count von Schlieffen to counter the disadvantaged position of the German Reich between two powerful allies like France and Russia. In order to avoid the danger of fighting a war on two fronts simultaneously, the Schlieffen plan held that the largest portion of the German army would be positioned between Metz and Aachen on the Franco German border with relatively few other troops remaining on the Eastern front. The plan involved the German right flank to swing into northeastern France through Belgium and the Netherlands to quickly rush for Paris. The bulk of the French army which was aligned in proximity to Alsace-Lorrain region would presumably attack the rest of the German frontier only falling deeper into the German encirclement. Once the French army began to retreat towards the Swiss border it would be fully surrounded by the entire German army and forced to surrender. Upon knocking the French out of the war, the Germans could quickly turn their attention and the entirety of their forces to the east to face the Russians.[6]

The Schlieffen plan appeared to be a logical strategy to the Germans and validates the principles of encirclement. However, it is important to recognize that when the First World War began in 1914, the encirclement through Belgium began with success but quickly encountered Belgian resistance and organizational problems which lead to its failure. The plan in itself was not fully executed as it was originally planned due to requisition and redeployment of German

[6] Terence Zuber, "The Schlieffen Plan Reconsidered," *War in History* 6 (1999): 262.

troops to the Eastern Front. The lack of manpower to support a right flank through Belgium was one factor that lead to failure, but it is even more important to consider the failure to sustain mobility that inevitably ended in a standstill. Coordinating old encirclement tactics with new technology was important to achieving victory, but it is something which clearly was missing in the opening battles of World War I: however great firepower of modern weapons may be, the loss of mobility leads to an inevitable stalemate.[7] The advance through Belgium lost mobility once railroads became ineffective. Once rail lines reach the front they usually are unable to move past the frontier and into enemy territory because the enemy will not allow it. Armies advance by using animals for transport which need food deducted from feeding the soldiers. The same problem was not encountered in the East where the Germans had to counter the Russian advance requested by their French allies. The Russian offenses through East Prussia and German territories that are now Poland failed once they found themselves completely surrounded in a network of railroads which extended through vast and open territory. The Germans used this network of rail lines to quickly deploy and surround the Russian forces by surprise. The Russians did not expect such an effective counterattack. But as they retreated it became harder to chase the remaining Russian forces through Russian territory after the rail lines ended.[8] But the problem of railroads ending on the Western front was not the only factor which slowed the offensive: the war in the west was fought on narrow fronts, meaning that the same advantage of vast open fields was not present and there were fewer rail lines. Once a railroad reaches the frontier it ends with a railhead. The railhead becomes crowded with a constant flow of troops

[7] Miksche, *Attack, A Study of Blitzkrieg Studies*, 1-9.

[8] Addington, *The Blitzkrieg Era and the German General Staff, 1865-1941*, 23-26.

and supplies, especially when considering that rail heads usually were situated in small stations in small towns which were unfortunate enough to find themselves relatively close to the front. A crowded rail line can lose effectiveness immediately. A stalemate is only further ensured once the enemy repeats the same thing and crowds their rail lines on the other side with a massive surplus of troops and supplies stocked up at the front and ready to be thrown into the conflict.[9]

As the German armies continued to penetrate through Belgium and into northern France, the loss of rail mobility slowed the whole flank and forced the Germans to continue on foot. Supply lines also slowed down and stopped the German army from reaching its operational objective. The advance became only more complicated when communications slowed due to an inefficient and uncoordinated hierarchy: stacks of reports lay on General von Moltke's desk increasing a profound insecurity of what action he should take next. Loss of mobility made it possible for elements of the French army and battalions of the British Expeditionary Force (BEF) to engage the slowly advancing Germans in a series of flank and counter flank movements to the North Sea. The Schlieffen Plan came to a halt and in order to avoid the loss of what territory was gained so far, the German high command ordered their army to dig in. Both sides were unsuccessful at breaching each other, securing what was already gained against enemy infantry and artillery attacks with a long series of trench lines that extended from the English Channel in the north to the Swiss border in the south. The next three years of war saw a war of position that was characterized with little to no mobility and no achievable objective. Reality grasped those who fought, inevitably coming to the conclusion that something had gone horribly wrong. From 1914 to 1917 leaders on both sides repeated the failed strategy of bombarding the enemy with

[9] Miksche, *Attack, A Study of Blitzkrieg Studies*, 47-53.

artillery followed by an infantry assault. The battle of Verdun which took place on December 18th 1916 was an attack planned by the German field commander Erich von Falkenstein to try and break through the French. He used the same artillery barrage and infantry assault tactic repeated through the entirety of the war, but on a larger and more concentrated scale. It seemed to him that no other strategies were available. By opening the attack with the largest and longest artillery barrage in history, he wanted to pin a large portion of the French army in one place for as long as possible, only to then advance with a large infantry assault. Any thought of using mobility in an effort to break through was given no consideration whatsoever by the Germans. Even after facing a large force such as the German attack, the French army resisted mostly thanks to what little mobility in their supply lines was available: this consisted of trucks coming from Bar-le-Duc which used some of the only paved roads to quickly deliver fresh troops to the conflict.[10]

The war regained some temporary mobility during the last year of fighting as tacticians deployed more conventional weapons which defied the strategy of previous battlefield maneuvers employed in the war thus far. The use of" Stosstruppen", or storm troopers, made progress by surprising the enemy with shorter artillery barrages comprised of gas and heavy explosive rounds. The Germans concentrated their attack at a "Schwerpunkt", or "point of focus", where after the artillery was fired, the storm troopers spearheaded the attack and penetrated the enemy lines. These tactics were used for the first time in the war under the command of General Oskar Huttier. But even the Stosstruppen, despite having better mobility in

[10] Robert Michael Citino, *Quest for Decisive Victory: from stalemate to Blitzkrieg in Europe, 1899-1940* (Lawrence: University Press of Kansas, 2002), 154-167.

smaller numbers and a heavier concentration at a given point, were slowed down as soon as they grew tired and supply lines collapsed behind their advance past the enemy.[11]

A much more logical solution of penetrating the enemy at a point of focus while simultaneously supporting such a spearhead was developed by the British general J.F.C. Fuller during the first three years of the war and was kept secret: the tank appeared for the first time on the battlefield in 1917. The idea of transporting weapons from one side of the battlefield to the other without losing a significant number of troops was fully embodied in the tank. When large formations of tanks under the command of Brigadier Hugh Elles appeared on the battlefield on May 20th 1917, the screeching noise of their tracks not only caught the Germans by surprise, but when these leviathans appeared out of the fog, they forced the Germans to fall back in fear because there was no real way to stop them.

Figure 1.1, British Mark IV Tank.

The events of the battle of Cambrai allowed each tank to cut through a separate section of barbed wire and cross any trenches in front of it. The tanks opened gaps in the German front lines which could be followed by infantry. The attack astonished the commanders on both sides, but was soon met with its own sort of problems. First of all, the tanks were large mechanical beasts which could easily breakdown and stop in their tracks. Second, a breach had not been seen in years, and once they made it past the German lines there really was no plan as of how to precede with the attack. Thirdly, the entirety of the British tank arsenal was deployed, thereby depleting any reserves.

[11] Citino, *Quest for Decisive Victory*, 168.

It was not long until the Germans found a solution in defending themselves against British tanks by using antitank artillery guns. The response was a counter attack with the usual artillery barrage and infantry assault. Although both sides continued to use tanks and Stosstruppen in the final battles of the war, it seemed as though commanders lacked sufficient operational thinking.[12] In the last large battle of the war, known as the Kaiserschlacht, the German command gambled everything in the attempt to make a final push by using massive storm trooper assaults through the enemy lines, but, despite initial breaches, the combination of low ammunition, exhaustion and insufficient supply lines only resulted in a counter offensive of more tanks lead by General Henry Rowlingson on August 8th 1918. This quickly resulted in a German defeat and failure to mobilize any more land assaults. After a last attempt of attacking the enemy by sea failed because of a mutiny of German sailors on Kiel, Germany surrendered on November 9th 1918 and officially signed the armistice on November 11th of the same year.

The war ended with massive numbers of casualties and very little success. Despite some mobility in the last year of fighting by using tanks and storm troopers, these all failed after initial success because mobility was not sustained with sufficient operational thinking, meaning that there was no plan to continue the attack beyond enemy lines. The events of the First World War became a topic of great debate during the interwar years among military thinkers all over Europe. The main focus of the issue was to rethink military strategy in order to never repeat the same mistakes again. Operational objectives were never achieved because any chance to sustain a concentrated attack lost effectiveness when it lacked mobility. This topic became much more interesting in both Britain and especially Germany, which faced the problem of defending two

[12] Ibid, 174-180.

borders after the restrictions of the treaty of Versailles. It was impossible to fight a war on two fronts with such a small army.

If Germany was to deploy its small force to either of the two borders to then quickly turn and defend the second, it required speed through mobility. It was then that many German strategists thought of a solution that could counter such a threat and allow the army to reach its designated area as quickly as possible: motorized divisions. The next few years of the inter war period brought to the argument for the development of motorized divisions as a means of defense. But after this debate involved specific masterminds of military strategy who found a way to use these motorized divisions for offensive purposes, these mobile divisions were redesigned for attacking. The evolution of motorized divisions as means of defense to an offensive role resulted in the creation of the infamous Panzer divisions.

It was the Panzer divisions which demonstrated might and strength during the early years of the Second World War by combining speed, firepower and effective strategy. These weapons were the product of German military engineering thanks to years of development that took place mostly between 1922 and 1938. The main figure who presented himself as a mastermind behind the creation and development of tank warfare was Heinz Guderian. His devotion to the idea of a Panzer division in the inter war period opened a new chapter of modern warfare which made the tank the new weapon of choice. But it is also true that Guderian faced many difficulties and much criticism by opposition which was only won thanks to the help and support of other high ranking individuals.

Heinz Guderian's concept of tank warfare developed after years of experience of fighting in the First World War. After the war, Guderian remained in the military where he alternated between training infantry and working as a radio operator as a member of the 10th Reichswehr Battallion in Hannover. Guderian became interested in military mobilization after being transferred to Munich to the 7th Bavarian Transport Battallion in January 1922, under the supervision of the strict and precise General Erik von Tschischwitz who could point out many of the flaws of motorized divisions. He quickly became intrigued with the potential of transporting troops. As seen with the railroad, transportation was always useful in getting troops and supplies to the frontline, but was never exploited to make it past the enemy.[13] At a time when Germany was subject to the harsh conditions of the Treaty of Versailles and could not be in possession of a large enough land army, defense of German territory from one border to the other became much more difficult. Guderian was concerned with Germany's weak defense and his top priority became the creation of a mobile force which could quickly deploy and respond to any enemy threat from one area of the country to the other in the shortest amount of time. Speed was not the only concern; firepower was also an essential part of any chance the small army might have had

Figure 1.2, Heinz Guderian inspecting a Panzer Division.

[13] Guderian, *Panzer Leader*, 18-21.

in defending itself in case of an attack. It was here that Guderian remembered the relatively small, but significant success of tanks during the last two years of World War I.[14]

Guderian's interest in the tank grew in the years following 1922 with extensive research on tactics used by the British and French armies in 1917 and 1918. He began to see the incredible potential of the tank in offensive maneuvers especially when combined with other branches of the army. The tank was to be used as a center piece on the battlefield, grouped with other tanks in a tank brigade and supported mainly by motorized infantry and motorized artillery. He learned much about tanks thanks to reading the works of British military strategists such as General Fredrick Charles Fuller, Captain B.H. Liddell Hart and Colonel Gifford Martel, who "were trying to make of the tank something more than just an infantry support weapon", especially in an age when motorization could be exploited to new levels. Each of these three focused on a different scenario in which the tank could operate. General Fuller came to the conclusion that a cluster of tanks was the best way to create a breakthrough in the enemy lines. The infantry was the preferred method to create a breach throughout most of World War I, but this tactic only ended in repeated failure. Colonel Gifford Martell instead realized that the enemy's natural instinct to prepare for the tank was the creation of the anti-tank gun. His work mostly developed around the idea of how to better defend a tank against anti-tank fire and how to reduce tank vulnerability. Captain Liddell Hart who was the most influential of the three British strategists, saw before Guderian the real importance and success of the tank, especially if

[14] Guderian, *Panzer Leader*, 20.

combined with motorized infantry which could be successful in long range strikes to disorient the enemy.[15]

Guderian's research and motivation caught the attention of General Wilhelm von Altrock who publicized Guderian's research. Although this publication was of little interest to many in high command, it still launched Guderian's career.[16] The next three years of his life were spent in Stettin, where he had a chance to enrich his knowledge of military history by instructing officers on general tactics used by Napoleon during the Napoleonic campaign of 1806 and French cavalry maneuvers during the first year of the First World War in 1914. Guderian's direct involvement in the development of the Panzers officially began in 1928 when he was assigned by General Stattmeister to train troops with tanks. His job involved overseeing tactics of the new LK 2 light tank in Sweden. Because Germany was forbidden from having tanks on German soil after the restrictions dictated at the Versailles Treaty, friendly relations with Sweden allowed Germany to have an area where training was possible. Although Guderian had never actually been inside of a tank, his experience in Sweden gave him reason to sustain his theory that tanks were very effective, especially after having seen tanks work in formations of battalions for the first time. He also noticed that if tanks were to be successful, new tanks needed to be developed because the slow and light LK 2 lacked far below the minimum requirements of speed and armor.[17]

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[15] Larry H. Addington, *The Blitzkrieg Era and the German General Staff, 1865*, 31-33.

[16] Guderian, *Panzer Leader*, 21.

[17] Ibid, 25.

In 1929 Guderian's theories began to attract supporters, but also those who opposed his strategy. Tanks slightly improved after World War I but still lacked adequate armor plating for protection and a radio system for even the most basic of communicative functions; these inadequate light tanks were part of the reason for why tank development received little support. Guderian wanted to find a proper solution to improve tanks, but instead of receiving the necessary support, he was instead subject to criticism. The main source of opposition came from three factions: the high command, the cavalry and the artillery. The support from high command was a necessity, but it became hard to find when Guderian was forced to deal with individuals such as General Oberst Ludwig Beck. He had many reasons for opposing the development of panzers, one of them being a lack of belief that such a strategy could work. Beck saw the tank as a machine that should aid the infantry only when necessary and thought of the infantry to be the bulk of an attacking force which should be the only real branch of the army that required strengthening.[18] He distrusted the use of the radio as a superior and effective system of communication, and instead preferred the old notion that generals commanded their armies from the rear by using maps. Next to Beck, the cavalry section of the armed forces constituted another group which opposed Panzer development. Despite the massacre of cavalrymen in the First World War, cavalry remained a prominent military group not only in Germany, but in many other European countries. German cavalrymen under the command of Walther von Reichenau feared that glory and manpower might be taken away from them and put into the panzer divisions. It is not too surprising that this was their reaction: forty percent of cavalry was in fact redeployed into the "Panzer Truppen" (or the body of troops that operated the tanks) later on. The artillery also had its reasons for resisting Guderian's strategy since artillery was always used

[18] Addington, *The Blitzkrieg Era and the German General Staff, 1865-1941*, 35-38.

as a stationary weapon located behind the infantry, dating all the way back to the 17th century. Artillerymen could not accept the theory that they could be put to better use if they were mobile alongside the tanks in the form of assault and self-propelled guns.[19]

Despite opposition, Guderian gained support when put under the command of General Oswald Lutz, who firmly believed in and saw firsthand the potential and capability of the Panzers. Guderian needed to solve a series of problems concerning the overall structure and types of tanks that needed to go into production. If the Panzer was to become the new weapon responsible for successful offensive operations, it was going to need troops who had to be trained; this is why Guderian insisted on the creation and distribution of Panzer manuals. Tank mobility was essential and required Panzers to be supplied with a four wheel drive system. This request was denied and replaced with two wheel drive, which made cross country move more difficult. There needed to be a combination of light and heavy tanks, where the light tanks were larger in quantity but advanced under cover of fire support from heavier tanks, which were smaller in number but were not to be underestimated because of heavier armor and fire power. Light tanks needed to be equipped with a cannon that could fire armor piercing rounds, along with a machine gun in the hull and one in the turret. Medium tanks instead required a larger 75 millimeter armor piercing gun and two machine guns in the turret and in the hull.

Guderian's plan for the ideal Panzer consisted of a five man crew. The driver sat in the bottom left side of the hull with a view of the field through a small opening in front of him. He was accompanied by a machine gunner who sat in the bottom right side of the hull and also functioned as the radio operator who kept in contact with other tanks and field commander. The

[19] Kenneth Macksey, *Guderian: Panzer General* (London: MacDonald and Jane's, 1975), 61-63.

other three members of the crew were placed in the turret. The gunner sat in the left side of the turret with the loader to his right could also use the turret machine gun. The commander stood up in the turret behind the gunner and loader, looking out of the turret or through the turret pillbox when under fire. The commander was very important in keeping the crew functional and coordinated, along with having a good view of the field, something which was not possible in World War I tanks due to his position right next to the driver with no visibility at all.[20] Speed and communication were much needed improvements. All tanks should be able to reach the speed of at least 25 miles per hour on the field to be effective. Communications between the crew and field commander consisted of a wireless radio system. The crew could speak into the radio system by using a larynx microphone.

Much time went into deciding what type of tank the German industry should begin to manufacture. Because the decision to start the production of tanks was repeatedly postponed, production was started late and did not allow for all the results expected by Guderian. Because too much time was wasted, the general had to settle for the creation of the light Panzer I (Panzerkampfwagen Eins), which was a design based on the light and not quite as effective British Carden-Lloyd tank. The Panzer I was too light, but was still used for exercises and became a centerpiece during the advance into Poland. Guderian quickly needed German industry to begin production of a stronger tank. Luckily enough General Lutz was able to receive a promotion and became the first General of the Panzer Troops (General der Panzertruppen) which allowed for the construction of the better and somewhat stronger Panzerkampfwagen Mark 2 or Panzer II. The Panzer I and Panzer II were products of Guderian's and Lutz's hard effort, but they still required improvements in armor and fire power,

[20] Guderian, *Panzer Leader*, 26-28.

seeing that they were weaker than the French 2C tanks. Despite these two weaknesses, by 1934 German tanks had the edge over the tanks of other European countries thanks to advanced thinking and a more organized system of communications.[21]

New improvements in the development and support of Panzer battalions were made during the summer of 1935. General Lutz's new promotion to head of the Panzer troops allowed Guderian to carry out the first exercises with the new Panzer I battalions. Guderian saw Hitler for the first time during a demonstration of new military developments at Kummersdorf. The showing off of motorcycle and Panzer I battalions impressed Hitler to the point where he could not hesitate to say "that is what I need". The first Panzer battalions even impressed the newly appointed head of the army, General Freiherr von Fritsch, whose opinion was the exact opposite of that of General Beck who later was forced to accept this new idea.[22] Guderian was also able to attract the support and attention of Colonel Fritz Fellgiebel, who was the inspector of Signal Corps. Fellgiebel's support allowed for the development of an efficient and organized radio system to be installed into each tank. Every radio system needed to be simple but reliable enough to make it past the noise and armor of the tank. The radio system was organized in such a way that radio range grew with the size of panzer formation level: a commander of a Panzer division had a larger radio range than a regiment commander. The types of radio also varied with the frequency required. A Panzer Corps transmitted to a Panzer division by using a 1000 W S b set type with a frequency range of 1090 to 6700 Kcsand a max range of 300 miles. A Panzer Division transmitted to a Panzer Brigade using a Fu 12 80 W S a set type with frequency range

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[21] Macksey, *Guderian: Panzer General*, 64.

[22] Guderian, *Panzer Leader*, 30-33.

of 1120-3000 and a max range of 25 miles. A Panzer Brigade transmitted to a Panzer Battalion by using a Fu 8 30 W S c with a Kcs frequency range of 1120-3000 and a voice range of up to 15 miles. Finally, a Panzer Battalion transmitted to individual Panzers by using the same Fu 8 30 W S c et type as the Panzer Brigades, but could also use radio sets of Fu 5 10 W S c or Fu 6 20 W S c both with Kcs frequency range of 2720-3330 and a voice range of 4 to 8 miles.[23]

The impressive exercises of 1935 made Guderian's dream of the Panzer divisions finally a reality. The very first three Panzer divisions were created and stationed in different parts of Germany. The 1st Panzer Division was stationed in Weimar under the direct command of General von Weichs who was also head of the army. The 2nd Panzer Division was under the command of . Guderian himself and stationed at Würzburg. Finally the 3rd Panzer Divisions was instead stationed in Berlin and placed under the command of General Fessmann. Successful exercises organized by Weichs continued throughout 1935 under Guderian's supervision Weichs was so impressed that one day,

Figure 1.3, Panzer Is in formation before an exercise.

[23] Macksey, *Guderian: Panzer General*, 65-67.

as the yellow balloon rose into the air to mark the end of the daily exercises said: "There's only one thing missing. The balloon should have *Guderian's Panzers are the Best* marked on it."[24]

By 1936 Panzer production focused only on the lighter Panzers I and II. Despite their lack of strength, the Panzers were used for the first time during the occupation of the Sudetenland. The occupation of this area fulfilled Hitler's aspirations of taking back territory which he claimed had a majority of ethnic Germans living in these areas of Czechoslovakia bordering Germany. This experience showed that a lack of trust in Panzer capability was still present, especially in an area that did not have favorable terrain for Panzer maneuvers. Some generals who opposed Hitler predicted the defeat of the Panzer divisions in the Sudetenland and planned to use this reason to overthrow him. The Panzers were successful despite the hard terrain because no real military resistance was encountered in Czechoslovakia. Despite the absence of a battle, this event allowed Hitler to remain in power and the Panzer divisions to receive additional support, even if a victory through armored combat would have left a much better impression.[25]

A year after the occupation of the Sudetenland, because many high ranking authorities saw this victory as pure luck and lacked evidence of effectiveness in battle, Guderian still needed to find more supporters. It was in the winter of 1936 during a series of training exercises that Guderian met the prestigious general Hans von Seeckt. Despite Von Seeckt's inability to directly contribute to Panzer production, it was a positive sign to have such an influential figure support Guderian. Hans von Seeckt was well known for the reorganization of the army during

[24] Guderian, *Panzer Leader*, 36.
[25] Macksey, *Guderian: Panzer General*, 68.

the Weimar period. His thinking in modern military terms allowed him to develop a strategy consisting of a rapid victory made possible through the combined use of the different branches of the armed forces, including mobile weapons. The fact that a military thinker such as Von Seeckt became interested in Guderian's strategy by drawing parallels to his own military doctrine is clear evidence that Guderian's thinking was on the right track.

Hans von Seeckt's contributions to the modernization and reorganization of the German armed forces took place mostly between the years of 1921 and 1926, and although it did not mainly focus on tanks, it still laid the foundations for a modernized army in which the Panzers could later operate. His main strategy focused on the concept of a successful victory to be guaranteed through speed. He thought that higher mobility in the army could be achieved by exploiting motor transport. A logistical system needed to be created to quickly replace men and material at the front. Although he believed in the idea of motorized divisions to be the best way to attack quickly and overwhelm the enemy, unlike Guderian, among those motorized divisions he believed that cavalry should be the main force guiding a speedy attack. Why Seeckt chose cavalry over tanks was not because of ignorance or stubbornness, but because he looked and worked with whatever weak tanks available at the time. One must keep in mind that Germany was forbidden from having tanks, and the models that were available were weak and inefficient, making the cavalry a much better option. All is not to say that he completely excluded the idea of the tank, especially because as time went by and the tank developed, he inevitably noticed its importance and improved capability.[26]

[26] Addington, *The Blitzkrieg Era and the German General Staff, 1865-1941*, 28-31.

Seeckt's experience of warfare came from his position as an officer during World War I. Like Guderian, he realized that the conditions of the treaty of Versailles left Germany incapable of defending itself with such a small army. The first thing to do was to turn the army into a group of highly professional men, rather than conscripted individuals whose lack of good training slowed down any chance of rapid mobilization. The army needed to show expertise in the modern rules of combat, especially with tactics of encirclement. Encirclement was one of Seeckt's favorite strategies, and he knew it could be successfully implemented when speed was the main force. It was here that the nucleus of the later theory of motorized divisions was formed. The general issued a field manual known as "Führung und Gefecht der verbundenen Waffen" or Combined Arms Leadership and Battle (F.u.G. for short) which gave a detailed description of the different branches and guaranteed speed by successfully combining all the different branches of the army including tanks, motorized divisions, planes and cavalry to play a main role.[27] Coordination between the different branches of the armed forces was not enough for Seeckt. He argued that coordination throughout a well-organized chain of command was also necessary. In the F.u.G. he stated that coordination is only enhanced with simplicity, meaning that a well-trained unit capable of taking spoken orders from a local platoon leader, rather than written orders from a general, will be more capable of seizing the moment under favorable circumstances. This new and better organized chain of command was similar to the radio systems and organization used in Panzer coordination.

[27] Robert Michael Citino, *The Path to Blitzkrieg: Doctrine and Training in the German Army, 1920-1939* (Boulder: Lynne Rienner Publishers, 1999), 7-1-.

Figure 1.4, Hans von Seeckt to the left.

As a response to basic defensive needs, Seeckt was very keen on supporting the idea of maneuverability to quickly respond to any enemy threat. It is interesting to see how the modernization of the German armed forces was used for defensive purposes rather than offensive ones. In the F.u.G., Seeckt's idea for the tank still involved its use as a defensive and support vehicle, but it is also true that in this defensive role, the tank was to be used in groups of five to increase fire power, therefore allowing the tank to be used in a formation. Despite the fact that the tank was used as a defensive weapon, it still was combined with a modernized defensive line and was coordinated with other branches of the army like artillery and anti-aircraft guns for the first time. This was the nucleus of what will later be known as the Blitzkrieg.

The first key developments to the modernization of the German army took place earlier in 1921. It is true that Guderian carried out successful exercises focused only on the tank in the early 1930s, but Seeckt preceded him with exercises that combined the different branches of the army and made the army compatible with tanks in the first place. The infantry became modernized and professional thanks to fitness, enthusiasm, skill and the use of modern weapons. This highly skilled infantry was able to successfully coordinate attacks with tanks, airplanes, and most importantly artillery which began to see some changes. The artillery saw an increase in effectiveness through mobility, meaning that fewer guns would fire at once allowing for most of the artillery in reserve to deploy at designated locations as needed. The artillery guns were

instructed to change location every time they fired so that they could keep the enemy guessing and avoiding a counter artillery strike. This concept was only better implemented in later years by Guderian which allowed artillery to actually become motorized.

From 1922 to 1926 Seeckt kept increasing speed and coordination between the different branches and improved the chain of command through simplicity and skill. As modernization freed troops from the chains of trench warfare and began to fully exploit the army's potential for offensive operations, weapons like planes and tanks also developed, allowing Seeckt to recognize that cavalry was less compatible with the concepts of modern warfare. This was not to say that he ever abandoned cavalry completely, but he definitely noticed the scarce but evident improvements made on tanks and began to accept the idea that they could actually be used for offensive operations and that more of them should be created. It was only in the winter of 1936 that Seeckt saw new and improved tanks maneuver in successful formations that finally convinced him of the effectiveness of the Panzer. He realized that it was compatible and could operate within a modernized and maneuverable army.[28]

The years preceding the beginning of the Second World War were important for the development of Panzer tactics. These were the years of the Spanish Civil War which took place from 1936 to 1939. Spain became the first real test ground for the Panzer Divisions tactics which used Panzer Is in force for the first time against the enemy. What made the Spanish Civil War even more important was the presence and involvement of other European countries other than Germany: The British, the French and the Russians also saw the opportunity to test their

[28] Citino, *The Path to Blitzkrieg: Doctrine and Training in the German Army, 1920-1939,* 20-22.

new and modernized instruments of war in this conflict, allowing the Panzers to go against a formidable and developed enemy to test their strengths and weaknesses. It is true that the Spanish Civil War is known for allowing Germany to show off the power of the Luftwaffe more than that of the Panzers, but what is usually forgotten is that the German Air force became particularly successful because of coordination with tanks which operated in formations on the ground.

Tank strategy underwent new developments during the Spanish Civil War after the Italian experience which, despite ending in failure for the Italian tanks and cast a general sense of distrust of tank capability, it still offered a chance to learn from the mistakes and improve tactics in the future. The Italians had friendly relations with Germany during the period of the Spanish Civil War and joined efforts by supporting Francisco Franco and the Spanish Fascist Party. Many Italian volunteers were used as supporting infantry in the Spanish towns, while the action of the tanks took place in the countryside. The Italian experience in Spain revealed new flaws with tank strategy that were fixed before the war began. On March 8th, 1937, Italian tanks grouped together and ordered to take the enemy by surprise where they were at first successful. The element of surprise was successful initially, but became failure when the attempt to further catch the enemy off guard was no longer sustainable due to the lack of mobility. This allowed the Italians to successfully spearhead the enemy in the initial part of the attack, but their inability to sustain rapidity and chase the routed enemy was only followed by the eventual regrouping of the enemy forces, which at their own time counterattacked successfully.[29] Italian failure was further implemented by the unavailability of air support because of bad weather conditions.

[29] Miksche, *Attack, A Study of Blitzkrieg Studies,* 19-22.

Despite the failure of the Italian tank initiative and giving many leaders further reasons to distrust the tanks, it allowed the German high command to learn much from these mistakes: it is no surprise that as soon as the Germans applied what they had learned, along with the support of the Luftwaffe, a small victory became immediately possible on the Spanish training ground.

No real chance of combat was given to the Panzer Divisions until the invasions of Poland on September 1st 1939. In the few years that followed the beginning of the Spanish civil war, other than Spain itself, the Panzers found themselves involved in minor operations with no real opponent. The annexation of Austria to the Third Reich in March 1938 and the Sudetenland crisis in May of the same year were the two occasions before the war in which the Panzers were used for activities in foreign terrain, but did not leave any significant sign of success. In fact during the Anschluss, which was Hitler's plan to reunite all Germans into a single nation, there were scenarios of Panzer failure which were just enough to cast more doubt upon Guderian's strategy of tank warfare. As the Second Panzer division crossed the border into Austria and began the advance from Linz to Vienna on the 13th of March, about fifty tanks broke down. Guderian admitted that about thirty percent of his tanks experience some sort of malfunction, even if the numbers appeared to be a little higher. General Fedor von Bock was quite angry because of this failure and distrusted the Panzers even more. However, it is also true that this long road which the tanks had to cross was in very poor conditions and saw heavy snow fall. Despite some failure, it gave the opportunity to learn from this mistake and improve the tanks once more.[30]

[30] Samuel W. Mitchman Jr., *The Rise of the Wehrmacht* (Westport Connecticut: Praeger Security International, 2008), 123.

Panzer division involvement in the Sudetenland was quite limited. Hitler's attempt once again to annex an area where he claimed ethnic Germans were living lead to the Sudetenland Crisis of 1938. Hitler began to organize and mobilize his forces along the Czech-German border. Many infantry divisions were deployed, along with three Panzer divisions which would help support the attack. The Panzers never saw action because military force was temporarily no longer required. The Munich conference of September 30th 1938 saw the acceptance of Hitler's demands by France and Great Britain. The territories in direct proximity to the German border were incorporated into the Third Reich. Later in the same year, Hitler wished to continue the expansion of the Reich and wished to take over the entirety of Czechoslovakia. Even this time, no military action was available for the Panzers after the Czech delegates accepted Hitler's terms of incorporating all of Czechoslovakia. The only maneuvers used after Czechoslovakia ceased to exist as an independent country was the deployment of infantry divisions to march on Prague. The German infantry arrived in Prague on the 15th of March 1938, officially occupying the city.[31]

Figure 1.5, a poster of Heinz Guderian as father of the Panzer Divisions

Despite the fact that Germany's new conquests in Europe gave little chance for an actual battle in which the Panzers could have been put to better use to test their effectiveness, more time was given to improve the tanks that were already

[31] Mitchman Jr., *The Rise of the Wehrmacht*, 168.

present. It is true that technical failures in 1938 were a sufficient enough reason to those who opposed the idea of Panzer operations to doubt their potential in battle, but this did not stop Guderian from improving what was already accomplished, and Hitler still remained supportive of Guderian's strategy. It would not be long before the Panzer Divisions actually got their first taste of battle during the Polish campaign of 1939. The Panzers went into battle with many individuals in the German High Command who doubted their potential, but were soon to be stunned and proven wrong by the effectiveness and success which was demonstrated through speed, fire power and a superior and unexpected strategy against a large enemy force. The Panzer Divisions were still in an experimental phase when they saw action in Poland, but through this baptism by fire they dominated the battlefield and became a critical component in Germany's new effective type of warfare which many nations would soon coin their own word for: Blitzkrieg.

Chapter Two

Poland: A Baptism by Fire

And First Proof of Success for the Panzer Divisions

The German campaign in Poland launched the beginning of the Second World War. The successful occupation of Poland represents the pitting of a larger industrial and modernized military power like Germany against a weaker and poorer neighboring country like Poland, which rapidly became acquainted with the reality of fighting a war on two fronts against overwhelming odds. The Panzer divisions played a major military role in the campaign in Poland. Given the might of the German Wehrmacht, Poland was the ideal combat opportunity in which the Panzers could be fully used in mass formations to rapidly overwhelm the enemy. They proved to be especially successful when traditional German military doctrines were combined with modern technology. Despite the usefulness of Panzer divisions during the Polish campaign, it is important to realize that the German tanks engaged for the first time an actual enemy army on a large scale, undergoing a baptism by fire, forcing them only after victory to be deemed a successful weapon by the German High Command. The Panzer divisions rolled into Poland with many German generals still doubting their effectiveness, but left the campaign with a much deserved sense of trust and admiration.

A series of diplomatic events forced an escalation of tensions between Poland and Germany which took place in the last week of August 1939. Poland's refusal to give the free city of Danzig back to Germany only helped to increase hostilities. Danzig lay in an area known

as the "Polish Corridor", an area which was previously part of Germany and was given to Poland allowing the newly created Polish Free State a guaranteed access to the sea[1]. Following World War I, the treaty of Versailles, divided East Prussia from the rest of the German heartland: Hitler wished to reunite the divided territories of the German empire.[2]

The invasion of Poland involved the use of the newly formed Panzer divisions which brought back to life the old doctrine of "Kesselschlacht", which translates into "the war of encirclement and annihilation." As the Germans began to mass troops and supplies along the Polish-German border, the OKW (Ober Kommando der Wehrmacht, or the High Command of the Wehrmacht) devised an objective to contain the fighting as close as possible to the border. This allowed the creation of a major pincer movement around the bulk of the Polish army. Such strategy involved linking major forces from north eastern Germany and East Prussia to the rest of the German forces advancing north from northern Slovakia. Only partial mobilization was ordered in order to leave part of the German forces on the Western front to defend against France, which also served to preserve the element of surprise. By combining air superiority with the motorized ground divisions, the attack was intended to be quick and successful with the encircling and annihilation of the Polish army.[3]

The structural and organizational composition of the German and Polish armies are the main factor to why the Polish campaign ended with a short and rapid German victory and why the Panzer divisions were successful in attacking a weaker and more disorganized enemy. It is usually assumed that Adolf Hitler oversaw all command operations, but early on in the war it

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[1] Addington, *The Blitzkrieg Era and the German General Staff,* 61-62.
[2] Steve J. Zologa, *Poland 1939: The Birth of Blitzkrieg* (Westpoint: Praeger, 2004),1-8.
[3] Addington, *The Blitzkrieg Era and the German General Staff,* 62-72.

was instead left to his generals as Hitler undertook more the role as political leader for diplomatic reasons: negotiating with the enemy as a leading political figure made more sense than appearing as a raging military commander. The High Command of the Armed Forces (OKW) was under the command of General Wilhelm Keitel and was assisted by General Alfred Jodl. He supervised the commanders of the different branches of the armed forces, including the army, air force and the navy. The Army, which included the Panzer Divisions, was left to the "Ober Kommando des Heeres" or OKH, and coordinated all land operations during the campaign. The OKH was under the command of Field Marshall Walter von Brauchitsch and was assisted by General-Oberst Franz Halder. The German forces in Poland were deployed and divided into two massive army groups, Army Group North and Army Group South. These two army groups started off from two different locations so that they could meet behind Warsaw and the Vistula River to encircle the mass of the Polish army. The two army groups were commanded by field marshals who reported back to General Von Brauchitsch. Army Group North was under command of General-Oberst Fedor von Bock, and Army Group South was under the leadership of General-Oberst Gerd von Rundstedt.

The coordination and structure of the German command system gave the Germans the edge over the enemy from the very beginning of the campaign because of its better organized chain of command. Much less impressive was the unfortunate command structure of the Polish leadership. Polish command consisted of a disorganized and uncoordinated effort on behalf of nine Polish commanders who failed to relay information to one another, and instead reported to Marshal Edward Rydz- Smigly. His partial dominance over the other Polish commanders was only achievable because these commanders looked up to Rydz-Smigly for guidance due to his position as successor of the great and unfortunately deceased Deputy Josef Pilsudski who led the

Polish army to victory against the Russians in 1920 and left the Polish army with faith that it there was opportunity for victory.[4] Polish High Command failed to keep an organized control over the army also due to a relatively low quantity of training of Polish field officers, one that was unmatched to the training received in the Wehrmacht. About fifty thousand Polish officers received their training in the Russian army during the First World War and a smaller group of officers received training in France. All these officers received poor training in these armies and never had any experience of command beyond the infantry division. The only officers with adequate training were the few one thousand that trained in the army of Imperial Germany: it was common that Poles preferred to train with Russians rather than within the German Kaiserheer. Things only became more complicated when there were two divided authorities of command: Josef Pilsudski made it so that any peacetime planning was left to a Ministry of Military Affairs, while the planning of future military operations in case of war was left instead to a second organization called the Inspectorate General.[5] Part of the reason to why the Panzer divisions were effective in Poland was because the OKH applied not only superior organization, but was also a single centralized and well organized unit.

The coordinated effort of the German commanders and field commanders of the Ober Kommando des Heeres created the general plan of invasion under the name of "Case White" (or "Fall Weiß" in German). Case White consisted of a full scale invasion of Poland, or at least the western part of Poland assigned to Germany after the signing of the secret Molotov-Ribbentrop treaty which satisfied the territorial needs of both powers, leaving the most eastern part of the country to the Soviets. It was imperative to achieve victory as quickly as possible in order to

[4] Zologa, *Poland 1939*, 15-17.
[5] Walter M. Drzewieniecki, "The Polish Army on the Eve of World War II," *The Polish Review* 26 (1981): 55-57.

anticipate any military reaction from the Western Powers. The pincer movement for operation Case White was carried out by launching the two army groups from two main areas so that they could meet and trap the Polish army on the right bank of the Vistula. Army Group South under Field Marshall Rundstedt had the heavier concentration of troops and was massed from the southern part of the eastern German border with Poland to northern Slovakia. It was ordered to strike a decisive blow from Silesia all the way towards Warsaw to the north east, and another decisive blow from northern Slovakia to engage Polish forces in Galicia. Army Group South advanced through some fairly flat terrain, but this was not where most of the Panzer Divisions were actually deployed: panzers made a negative impression on Field Marshal Rundstedt making him one of the German generals who had little faith in Panzer effectiveness. Most of the Panzer Divisions were instead concentrated in Army Group North where Guderian was also present. The objective of this second army group was to cut through the Polish Corridor and crush any resistance by then linking with more German forces deployed in East Prussia. From there on, these forces would push south towards Warsaw, linking with Army Group South and completing the pincer movement. It was during the maneuvers of Army Group North that the Panzer Divisions and Guderian proved to be successful, despite the harder terrain.

German plans officially put Case White into effect after the first stage of mobilization of nine infantry divisions on June 26th, 1939. The second stage of German mobilization began on August 3rd, with a total of nineteen divisions deployed to East Prussia. The downside of Case White was that the Germans placed their troops without a sufficient amount of intelligence known of the Polish forces, but this did not appear to cause any general concern knowing that the

chance of defeating the Poles was very high: over confidence was something that the Germans could afford in Poland.[6]

It is clear so far that the Germans planned to encircle the Polish forces with a pincer movement planned for Case White. The Polish High Command was aware of the possibility of both a German attack from the west and a resuming of hostilities with the Soviet Union in the East just like the raid on Kowel two decades earlier in 1920. It seems logical to understand why Polish military operations focused on defense, rather than attempting an offense that would be impossible on two fronts. The Poles organized two main plans for the defense of Poland: Plan W was set up in case of attack from the Russians and Plan Z was the response in case of an attack by the Germans[7]. The Polish plan of defense against the Germans in western Poland was the perfect opportunity to prove to the world that Germany's modern and mechanized military was revolutionary and extremely successful. Offensive operations were the ideal scenario in which the Panzer divisions could successfully carry forward an attack against an enemy who was entirely on the defensive.

When the campaign began, plan Z went into effect and involved a combination of two major defense strategies. The first plan took advantage of the available fortifications along the Biebrza, Norew, Vistula and San river lines which were made up of old Russian forts. Unfortunately these river lines were so far east that before the Poles had even a chance to fight off the invasion, the Germans would have already occupied the larger populated and industrialized portion of the country. The Polish plan of defense counted heavily upon allied intervention in the west, meaning that if the Polish army were to fight behind the river lines, it

[6] Zologa, *Poland 1939*, 19.
[7] Micheal Alfred Peszke, "The September 1939 Campaign in Poland," *The Polish Review* 30 (1985): 427.

would have appeared that they were not even willing to fight for their own territory, discouraging France and Great Britain from intervening. The second plan of defense instead organized the deployment of the majority of the Polish military further to the west in a larger defensive line along the German border, but with no fortifications or natural boundaries such as rivers to hold a stable defensive line. In the end the Polish High Command accepted a compromise of the two plans, which resulted in keeping a smaller line of defense to the west to slow the Germans, only then to retreat past the Vistula and continue the fighting from there. But the final Polish plan had no way to fully prepare for the high mobility of the German armed forces and Panzer Divisions, which successfully spearheaded the Polish lines in a matter previously never expected, eventually leading to the encirclement and destruction of the Polish army.[8]

Strategy and command organization of the German army were already two factors that contributed to the fall of Poland in 1939, but the overwhelming advantage realistically came down to the material level. There is no denying that the German army was large, strong, well trained and quite mobile on the eve of World War II, especially after the military developments of the Inter-War period and rearmament in open defiance of the Versailles treaty. Germany had a greatly increased military budget, roughly the 1939 value of twenty-four billion US dollars. The number is quite staggering especially when compared to Poland's much lower military budget of approximately 760 million dollars. Such a large budget allowed for the training and upkeep of 600.000 men. All these troops were grouped into fifty one divisions: thirty seven were infantry divisions, one mounted division, four motorized infantry divisions, and more importantly six Panzer divisions along with another four lighter armored divisions, supported by other military formations like artillery, mobile anti-tank and anti-air guns.

[8] Zologa, *Poland 1939*, 19-21.

The six main Panzer divisions which were available by this time were not composed of the strongest tanks and were still in an experimental phase of functionality and performance on the battlefield. The bulk of the Panzer divisions this early in the war were formed mostly of Panzer Is and Panzer IIs. Panzer Is amounted to a total of 1445 tanks while the Panzer IIs came to a smaller number of 1223. It is true though that the first two types of heavier tanks known as the Panzer III and the Panzer VI, which became the bulk of the Panzer divisions during the occupation of France, were already present at this point. The number of medium Panzer IIIs came to a total of eighty nine tanks, divided into twelve per division. The stronger Panzer IVs consisted of two hundred eleven tanks and assigned six to every regiment. The Panzer divisions were accompanied by a number of other vehicles, including one hundred ninety Czech Panzerkampfwagen Mk. 35 type T (PzKpfw 35 T) and another seventy eight PzKpfw 38 T, both of which were also light tanks armed with a light cannon. In addition to tanks, the Panzer divisions were equipped with armored cars, in particular the types Sdkfz 221, Sdkfz 222 and Sdkfz 223, each mounted with a machine gun.[9]

Figure 2.1, Panzer I in the Snow.

The six main Panzer divisions which all saw action during the Polish campaign shared a similar structure and variety of vehicles. The lighter tank models of Panzer I and IIs which made

[9] Ibid, 23.

up the bulk of each division were supported by a few heavier tanks along with many other support vehicles like armored cars, mobile artillery and halftracks which transported infantry. An example of a typical German Panzer division in 1939 included the 2nd Panzer Division commanded by Heinz Guderian. It is from the operations of this particular division that the general's firsthand accounts reveal the rapidity and success of the German advance into Poland, but his experience also reveals the difficulties which were encountered during the advance. The 2nd Panzer division was formed as early as 1935 and was first deployed during the Anschluss in 1938. By 1939 it had seen action in the very first days of the campaign within the Polish Corridor and in central Poland where it suffered some few losses. This division was formed of the 3rd Panzer Regiment, 2nd Panzer Grenadier Regiment, 304th Panzer Grenadier Regiment, 74th Panzer Artillery Regiment, 2nd Motorcycle Battalion, 38th Tank Destroyer Battalion, 38th Panzer Engineer Battalion and the 38th Panzer Signal Battalion. The 2nd Panzer Division follows a fairly traditional pattern as far as its composition: the tank battalions themselves form the bulk of each division and are the driving

Figure 2.2, Panzer IIs advancing through a town.

force behind the advance, but are supported by mobile artillery and mobile Panzer grenadier regiments.[10]

The Polish armed forces were weaker and differed in many ways from those of the Germans. Poland's industrial backwardness and insufficient funds eliminated any chance of ever creating a strong and modernized army. Poland's industrial capacity consisted only of an iron and steel industry with a low output of oil, lacking everything else such as car and truck manufacturing. This forced Poland to buy any outdated weaponry that other nations no longer needed, making it resemble an army equipped for World War I on the eve of the Second World War.[11] Many of the Western countries including the United States already had an industrial infrastructure with many competing private weapon producing enterprises, all of which military branches of their governments depended on. Unfortunately for Poland, everything needed to start from scratch, including building factories and training engineers. The airplane industry was the only one which met a minimum standard of production and had a limited output.[12]

The Poles were equipped with a very wide range of imported weapons no longer needed by other countries. A plan was put into effect in 1923 that would reorganize and enlarge the army by 1935 into thirty infantry divisions, eleven cavalry divisions, ten tank battalions and ten air force squadrons. Unfortunately this never happened due to insufficient industrial strength. The minister of military affairs General Wladyslaw Sikorski created a single special and well

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[10] Samuel W. Mitcham, *The Panzer Legions: A Guide to the German Army Tank Divisions of World War II and Their Commanders* (Westport: Greenwood Press, 2001), 46.

[11] Department of Military Art and Engineering, United States Military Academy, *The Campaign in Poland 1939* (West Point: New York, 1945), 2.

[12] Peszke, "The September 1939 Campaign in Poland," 430.

equipped military unit to defend Poland against Soviet Russia in the east, meeting a basic standard for a modern military group, but leaving the rest of the Polish army with very few weapons and much in a much weaker state. By 1926 military maintenance was already so high that any other funds to invest into modernization were scarce.

By 1935 Poland's military backbone was the infantry which was supported by very little artillery, few aircraft and a small number of anti-aircraft units or tanks. All Polish supply lines were horse drawn and lacked mobility in comparison to other relatively more mechanized supply systems created in other European countries. The closest attempt at modernization was made in the same year by planning to equip the infantry with sufficient machine guns, mortars, anti-tank weapons and field artillery, increasing fire power of the infantry divisions making them at least somewhat comparable to those of other European countries. Unfortunately the infantry was only equipped with enough weapons that could only amount to a fifty percent fire power capacity of foreign infantry. The only successful efforts at modernization were partially realized in the means of mechanization of cavalry regiments which were supposed to be supported by mechanized infantry, tanks and artillery. But once again, Poland's low industrial output and superficial planning allowed for the creation of only a few

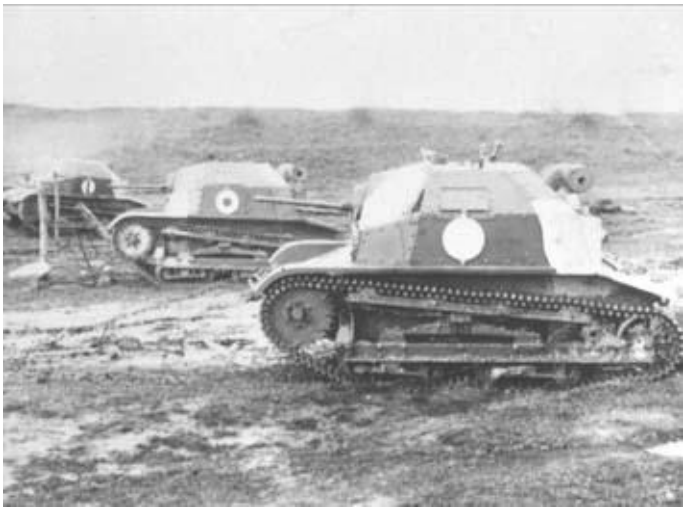

Figure 2.3, Polish TK-7 light tank

light tanks which were so few in numbers that the Polish High Command decided to keep them closely tied to the infantry as individual support units.[13]

Very few improvements were made when war broke out on September 1st 1939 and the Polish army (which resembled that of one from the First World War) was forced to fight against Germany's stronger and higher mobile military force. It is true that Poland had significant militant manpower of 210,000 men. Twenty three infantry divisions with three in reserve were assisted by eight cavalry brigades, three mountain brigades and a single motorized brigade. Cavalry was still accepted not only due of tradition, but also because it seemed to be the most effective in the eastern marsh lands where the terrain was more difficult. Industrial backwardness made only a small number of tanks available. The Polish tanks were primarily light and small, used to create support for the infantry. A grand total of 450 TK and TKS tanks were available in 1939 with very light armor plating and only machine guns. They were divided into groups of 13 to support infantry and cavalry. Poland also received twenty two British Vickers tanks armed with a 47 mm cannon, but these were too few. An attempt was made to duplicate and produce the Vickers tank in Poland but was met with little success: a total of only forty were made and called the 7PT tank, armed with a 37mm British Bofors gun, too few to contribute accordingly to the war effort. France also pledged support but limited itself to send a single battalion of Renault-35 tanks. Mechanized divisions must be supported by motor vehicles to be successful. Such was the case in the German army with its 936 trucks and half-tracks. The

[13] Drzewieniecki, "The Polish Army on the Eve of World War II," 55-61.

staggering comparison with Poland was that the Polish army had only 76 of these motor vehicles and relied almost entirely on horses.[14]

An important difference between the command structures, plans of operation, and military material strength of the two armies, is an important strategic factor to the understanding of why the Germans had an edge over their Polish adversary in 1939. Structure and strategy of the Wehrmacht was important, but when supported by the efficiency of the Panzer Divisions it became essentially unstoppable by the Polish Army. The Panzer Divisions were organized in such a way that when they attacked they functioned as a single organized system based on mutual support of the various branches, meaning that although the German tanks constituted the backbone of this great force, they were aided by mobile artillery and mechanized infantry so that all aspects of the enemy's defense could be properly dealt with. Air support of the Luftwaffe provided convenient air strikes on targets upon request, along with protection from the enemy's air force. As the war progressed, the different units incorporated into a Panzer Division changed and varied, but in Poland it is possible to see the very first type of organization of a single Panzer Division where although it was more simplistic, it was still ahead of its time and certainly ahead of its adversaries. The first Panzer Divisions in Poland were made up of one tank brigade, one Panzer Grenadier brigade and various supporting elements. A single tank brigade was made up of a mix of four hundred light and medium tanks. Every tank brigade was divided into two tank regiments. About two thirds of these tanks were the lighter Panzer Is and IIs, while the remaining one third was made up of the medium early models of Panzer IIIs and Panzer IVs. The panzer brigade is escorted by a Panzer Grenadier brigade, the German mechanized infantry which accompanied the advancing tanks with halftracks and armored cars. Distinguishable by

[14] Zologa, *Poland 1939*, 24.

their light green piping of their should boards from regular slower paced infantry in white shoulder boards, they would assist the advancing tanks by eliminating targets which the tanks could not reach like well entrenched machine gun nests or anti-tank guns: the mutual support of these units consisted in their engagement of these particular targets under the cover of tanks. All Panzer Grenadier brigades were also divided into two regiments. Finally, the Panzer Division was aided by supporting elements like mobile artillery which followed in closely behind to the tanks. Other supporting units consisted of mobile anti-aircraft guns which also played their role in offering defensive cover to the advancing tanks that were ahead.

The attack officially began at 4:17 A.M. on the morning of September 1st 1939. The early hours of the campaign opened with air dominance of the Luftwaffe over Poland where the Germans carried out bombing runs shielding the advancing armor and troops on the ground[15]. Some two thousand German Stuka Junkers Ju-87 dive bombers faced little opposition from the much weaker and slower 771 Polish P-7 and P-11 planes. The Luftwaffe targeted cities, railroads and mobilization centers, making many Poles like the young cadet K.S. Karol wonder "where are our planes? Did Poland have any planes?" Many thought that the Polish planes were all fighting at the front, but when they realized that the front was all around them and that there was still no sign of the Polish air force, it seemed clear that the Germans were the only ones ruling the skies.[16]

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[15] Nicholas William Bethell, *The War Hitler Won: the Fall of Poland, September 1939* (New York: Rinehart and Winston, 1973), 1-3.

[16] K. S. Karol. "A Polish Cadet in Action, September-October 1939," in *The Mammoth Book of Eyewitness World War* II, ed. Jon E. Lewis (New York: Carroll & Graf Publishers, 2002), 36.

With the support of the Luftwaffe, army groups north and south began to advance towards their objectives and to join each other. Within the force of 630,000 men grouped into seventeen divisions, General Heinz Guderian's 2nd Panzer Division began the thrust through the Polish Corridor penetrating deep into Polish territory. Guderian was one of the first generals in history to ever ride alongside a tank formation and command a division in an armored vehicle, as he stated "incidentally it may be noted that I was the first corps commander ever to use armored command vehicles in order to accompany tanks on the battlefield. They were equipped with radio, so that I was able to keep in constant touch with my corps headquarters and with the divisions under my command."[17]

The first serious fighting took place north of Zempelburg where "the leading tanks found themselves face to face with Polish defensive positions."[18] Despite some direct hits from Polish anti-tank guns, Guderian's division pushed through three enemy infantry divisions and one Pomorska cavalry division. This attack was successful thanks to the ingenuous German attack organization which followed a precise pattern. This pattern started with an attack order which chose the objective and individualized enemy targets along with heavy weapon emplacements. Sectors of attack were assigned designated targeted areas to different troop formations. A fire plan was then drawn up to coordinate the attack between the tanks and the mobile infantry and artillery. The tanks were normally the first to advance and break through a given point of focus in the enemy defensive line. Depending on the terrain, they attacked in single and double file or wedge and double wedge formations. The attack was carried in three waves of which each had a specific function. The first wave was charged with the task of cutting through the entire line to

[17] Guderian, *Panzer Leader*, 68.
[18] Ibid, 70.

reach the enemy's rear as quickly as possible in order to engage the artillery. It covered a total of two to three thousand yards of an enemy sector and was organized into one Panzer battalion of a total of two companies which were normally the lighter but faster tanks. The commander traveled with the first wave. It was flanked by assault guns functioning as mobile anti-tank artillery with panzer grenadiers travelling in half tracks. As the first wave smashed through the entirety of the enemy line, the second wave covered the first along with concentrating on enemy defenses. As the heavier tanks and mobile artillery provided covering fire for the tanks in the first wave, they also helped the Panzer Grenadiers suppress and eliminate anti-tank positions and machine gun nests. Travelling at approximately the distance of one hundred fifty yards behind, another Panzer battalion of heavier tanks advanced with the flanks being protected by anti tank guns and more Panzer Grenadiers. The mobile artillery received fire coordinates by the artillery observer who is travelling further ahead with the Panzer commander in the first wave. Most of the enemy targets had already been engaged by the first two waves, so it was the third and final wave which was tasked with the goal of mopping up any remaining resistance from areas not easily accessible to tanks with the remaining Panzer grenadiers.[19]

At times the attack could have been concentrated on obstacles like bridges or stronger points of focus which required the assistance of the supporting infantry or artillery in advance. If a given point happened to contain a concentrated number of anti tank weapons, then the mobile infantry or Panzer Grenadiers were sent in to quickly neutralize specific targets by using assault vehicles like halftracks under the cover of tanks. The tanks then advance and surpassed the infantry, coming then to halt if favorable cover was available so that the Panzer Grenadiers could

[19] US War Department, *Handbook on the German Military Forces* (Baton Rouge: Louisiana State University Press, 1990), 218-219.

catch up. Infantry was used in one way to breach the area of the initial attack, but it had an even more important function while advancing through the enemy line. Panzer Grenadiers and tanks formed battle groups within the waves known as "Kampfgruppen" normally used to eliminate enemy pill boxes. These Kampfgruppen were made up of one platoon of tanks, one of infantry and a squad of engineers. When approaching a pillbox some tanks advanced closer with infantry under the cover of other tanks after the artillery fired heavy explosive and smoke rounds on the target. The tanks run over any barbed wire to allow the infantry and engineers to get closer to the enemy. The infantry then engages targets outside and inside the enemy pillbox so that the combat engineers can blow it up. Mutual support of tank and infantry formations were aided by a coordinative effort with both the mobile parallel advancing artillery and stationary artillery which is moved as quickly as possible to the back of the German line. The mobile artillery commander and Panzer commander are in constant communication with one another, as well as with the commander of all stationary artillery which made the advance much by opening a clear path for the tanks. It also buttons enemy command posts limiting their commutations and therefore limiting their ability to respond to the attack. The attack also concentrated fire the on enemy opposite artillery and anti tank positions. The tanks advanced with much more ease when the artillery carpeted the path ahead of the tanks while suppressing the flanks of the line of penetration.[20]

By the end of the day, Guderian joined forces with General Freiherr Geyr von Schweppenburg's 3rd Panzer Division at the Brahe River where small groups of entrenched infantry were desperately trying to hold on to a bridge. German infantry were ordered to cross the river in rubber boats at a blind spot not subject to enemy fire. After having reached the other

[20] US War Department, *Handbook on the German Military Forces*, 220-223.

side they extinguished a fire which had been set on the bridge. Guderian next ordered the advance of his tanks across the bridge, crushing the Polish infantry on the other side, and ending what was a successful first day of fighting. The only real resistance offered by Poland on the first day of the war involved a series of small attacks by infantry groups against the small town of Jansborsk in East Prussia, which was away from the bulk of the fighting and merely caused some panic among the citizens.[21]

The following day the Poles attempted to counter attack but with little success. Instead, they were surrounded by Guderian's Panzers in a smaller pincer movement. By September 4th Guderian's Panzer Division tightened the noose around the majority of the Polish troops fighting within the Polish Corridor. The dry and sunny weather greatly favored the advance of tanks by leaving the flat ground hard and the rivers low[22]. The failure of the Poles to anticipate the tactics of a Panzer attack did not allow the preparation for proper defense and ensured a smooth German advance. As the Panzers advanced, the Polish army was so disorganized that even retreating became essentially impossible especially because it took Polish command one to two days to give orders due to slow communications.

The Poles were destroyed the following day and in the event of such success, Adolf Hitler arrived at Army Group North in a surprise visit. Guderian was welcomed by Hitler as the two men drove down the Tuchel-Schwetz road, passing numerous destroyed Polish vehicles and equipment. Hitler noted the destruction, asking Guderian if "our dive bombers did that?" to

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[21] Stanislaw Strzetelski, *Where the Storm Broke: Poland from Yesterday to Tomorrow* (New York: Roy Slavonic Publications, 1942), 97.

[22] Bethell, *The War Hitler Won*, 99.

which Guderian replied "No, our Panzers!"[23] This event convinced Hitler that the Panzer Divisions were capable of accomplishing. When he asked Guderian what was needed to strengthen and improve the tanks, the Panzer commander insisted that stronger tanks like the Panzer III and Panzer IV should be improved with stronger guns and better armor plating. These tanks needed to be produced in larger quantities, and such requests were partially fulfilled in the days immediately following the campaign in Poland.

The first days of the attack demonstrated the mastering of mechanized ground warfare with the support of synchronized air attacks. The Panzer Divisions, whose effectiveness were doubted by many German generals, performed particularly well and proved many of them wrong. The Poles were so technologically behind that they could not keep up to such modern weapons and tactics. The bombing of railroads slowed the Polish army, but any further coordinated attacks also failed after the Germans were able to obtain the enemy's secret military codes. The Poles found themselves anticipated at every move forcing communications within the Polish army to relay all orders by couriers. Within a few days the conflict turned into "a battle of separate detachments of an army on the technical level of 1914 against the vastly superior forces of an up to date 1939 mechanized army functioning perfectly."[24]

The success of the German advance through the first days of fighting was noted by other officers of the Panzer division like General F.W. von Mellenthin of the 4th German Panzer army who claimed that "our mechanized columns raced over the border and soon made deep penetrations into Polish territory."[25] It was here that one of the famous episodes about the charge

[23] Guderian, *Panzer Leader*, 74.
[24] Strzetelski, *Where the Storm Broke*,86.
[25] Mellenthin, *Panzer Battles*,3.

of Polish cavalry against German tanks took place. The best formations in the Polish army were in fact by this point the cavalry "which fought with magnificent gallantry- on one occasions they charged our panzers with drawn sabers."[26] Even General Mellenthin realized that the reason behind Poland's lack of stronger military support was largely dependent on industrial backwardness, but he criticized Poland for not having adopted even the most basic form a modern tactics which contributed significantly to their high losses. A strong sense of Polish tradition in using cavalry created a bias in favor of supporting the horse, which was considered to be more reliable than the overrated tank because it would not break down, it was more maneuverable and it was easier to find fuel for. But what the Poles did not take into account was the fact that the attack came from the open terrain between Poznan and Warsaw which was the ideal fighting ground for tanks, and it came down to the simplest truths where bullets will stop a horse, but not a tank.

As most Polish resistance was annihilated in the Polish Corridor, Polish Major Bortnowski retreated with the remainder of his few troops from Lodz to Warsaw. A mere twelve thousand men remained to fight a guerrilla style warfare but was wiped out by following paramilitary Einsatzgruppen of the Waffen-SS.[27] As soon as Guderian resumed the advance on September 6th, his Panzer division crossed the Vistula River after joining up with the forces from East Prussia in a united advance towards Warsaw. As the Panzer divisions of Army Group North approach Roszyn on September 7th, the Polish General Headquarter along with their commander Smigly evacuated Warsaw and relocated 125 miles east of Brest-Litovsk to

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[26] Mellenthin, *Panzer Battles*, 4.
[27] Alexander B. Rossino, *Hitler Strikes Poland: Blitzkrieg, Ideology and Atrocity* (Lawrence: University Press of Kansas, 1966), 58.

command the remaining elements of the Polish army. Retreating troops from western Poland were ordered to dig in along many of the river fortifications that followed the banks of the Bug, Vistula and Narew rivers. It would have been more helpful for the Polish leadership to remain in Warsaw to coordinate the army's maneuvers more efficiently, but having chosen to relocate made command harder and forced the Polish troops to rely on small uncoded radio messages.[28]

As the two army groups advanced towards Warsaw, larger battles of the campaign took place as the vast majority of Polish armed forces were concentrated in and around the city. Resistance increased as morale and the will of the Polish troops understandably increased in the defense of their capital. A little only after a week of fighting, the success of the German advance was so overwhelming that the capital was almost reached. But concentrated resistance around and inside Warsaw turned the second week of the campaign into a week long siege of the city.[29] Guderian continued to advance on September 9th and 10th towards the Polish capital driving his tanks across the Narev and destroying the fortifications and defenses at Vizna. Although this attack was successful, it was the beginning of difficulties for the Germans. Even Guderian's seizure of Narev saw a breakdown of communications when commanders failed to follow orders, especially in light of increasing resistance: communication was vital for the German war machine to keep the campaign moving forward as smoothly as possible.[30] The Battle of Bzura became the largest battle of the whole campaign. It was here that some short comings in the German way of conducting the campaign emerged, such as supply lines stretching thin and the mobilization of the German divisions slowing down: almost two entire Panzer divisions ran out

[28] Bethell, *The War Hitler Won*, 100-105.
[29] Ibid, 114.
[30] Guderian, *Panzer Leader*, 80.

of fuel for a short period of time. However, it was an opportunity to learn from these mistakes and apply these lessons later in France.[31]

As Polish troops marched towards the capital from all sides of eastern Poland, two large armies, the Poznan army under General Kutrzeba and the Pomeronia army under General Bartnowski took the Germans by surprise, pushing them back ten miles near Strykow. Although it was a mere good fortune that could not last for much longer, there was much hope that the Pomeranian and Poznan armies could reach the capital. As the situation at the Bzura deteriorates for the Polish army, fierce resistance in the capital increased. It was during this struggle that acts of heroism among the Warsaw population followed, especially after having beengiven hope that the German advance appeared to slow down. University students and professors from the Warsaw Polytechnic Institute joined forces with the city's garrison to defend as best as they could.[32]

As Warsaw continued to resist, the two Polish armies were still in route to assist troops fighting around Warsaw. When the Poznan army reached Sachaczew, they were cut off by the left arm of the pincer movement encircling Warsaw. Guderian was a part of this attack against the Poznan army as he was headed in the direction to capture Brest-Litovsk. On September 17th he crossed the Bug River followed by elements of the lighter 10th Panzer division tightening the noose around the Polish capital.[33] The remainder of the Polish armies made their way to Puszcza Kampinoska woods outside of the city, but it was too late after the massive German pincer movement was completed. As Guderian advanced from the northwest across the Bug and the

[31] Bethell, *The War Hitler Won*, 137-140.
[32] Strzetelski, *Where the Storm Broke*, 26.
[33] Guderian, *Panzer Leader*, 82.

German 8th Army broke through at the Bzura further south, nineteen Polish infantry divisions and three cavalry brigades surrendered to the German 8th Army.[34] France and Great Britain thought that the Polish army no longer had any chance of retaliating and that Poland was completely lost.

September 17th was an important date in the Polish campaign, for it saw success in the German plans where Army Group North and Army Group South met in the town Wlodawaand closing the gap in the encirclement around Warsaw: all was lost when the Soviet Red Army began the advance from the east with over 100 infantry divisions. The Russians mopped up any disorganized and tired Polish troops who were desperately trying to make their way to Warsaw. Once encircled, only Warsaw with its 30.000 garrison and citizens under the inspirational leading of Mayor Stefan Starzynski desperately tried to hold on to the city.[35] In Guderian's eyes the campaign seemed to be officially over by September 22nd, as there were no more operations to be carried out in the field as there were no enemy formations to counter and any remaining fighting took place in the city. Warsaw surprisingly resisted until the 27th after the death of ten thousand civilians and two thousand soldiers. Mayor Starzynski surrendered the city at 1:15 P.M. of that afternoon. The campaign in Poland was over.

Within a month of fighting, the mobility and mechanization of the German Panzer divisions played a key role in the overwhelming and rapid occupation of Poland. There were many lessons to be learned and improvements to be made. It was impressive to see what could be done when a military force such as Germany's combined old strategic tactics in the context of modern organized warfare. It was under Guderian's communication and command structure that

[34] Mellenthin, *Panzer Battles,* 5.
[35] Bethell, *The War Hitler Won,* 140.

many losses were avoided. Although every German success may have been blown out of proportion in some cases by Nazi propaganda, it was a rapid attack which many in the German leadership hoped would shape international relations and for Great Britain and France to reconsider peace[36]. After the campaign there were many officers like Guderian who hoped for improvements of the Panzers. Mellenthin argued the need for more Panzer IIIs and Panzer IVs to be produced, and upgraded with larger 75 mm guns instead of the weaker 37 mm, replacing the majority of Panzer Is and IIs which were armed with machine guns[37].

It was the Polish campaign which allowed the Panzer divisions to experience a baptism by fire in the content of a proper conflict. The world witnessed an effective lightning warfare spearheaded by the mastering of German tank formations and tactics which had decisively proven themselves superior to any other army at the time especially when coordinated with air strikes. Heinz Guderian and his 3rd Panzer Army redeployed to Eastern Prussia after the campaign was over to receive proper improvements and better tanks before the continuation of the war in the west. The effectiveness of the German war machine was seen in the eyes of those Poles who witnessed a campaign where "modern warfare was becoming increasingly a clash of two productive potentialities and two technical mechanisms. It must be admitted that in September 1939 fate was decidedly on the side of Germany"; circumstances such as the flat terrain were "admirably adapted for modern mechanized warfare."[38] Poland was the most perfect and ideal place for the Panzer divisions to become a new great weapon on the field and it proved that better, stronger and faster tanks would make future campaigns even more successful.

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[36] Guderian, *Panzer Leader*, 86.
[37] Mellenthin, *Panzer Battles*, 6.

[38] Strzetelski, *Where the Storm Broke*, 97.

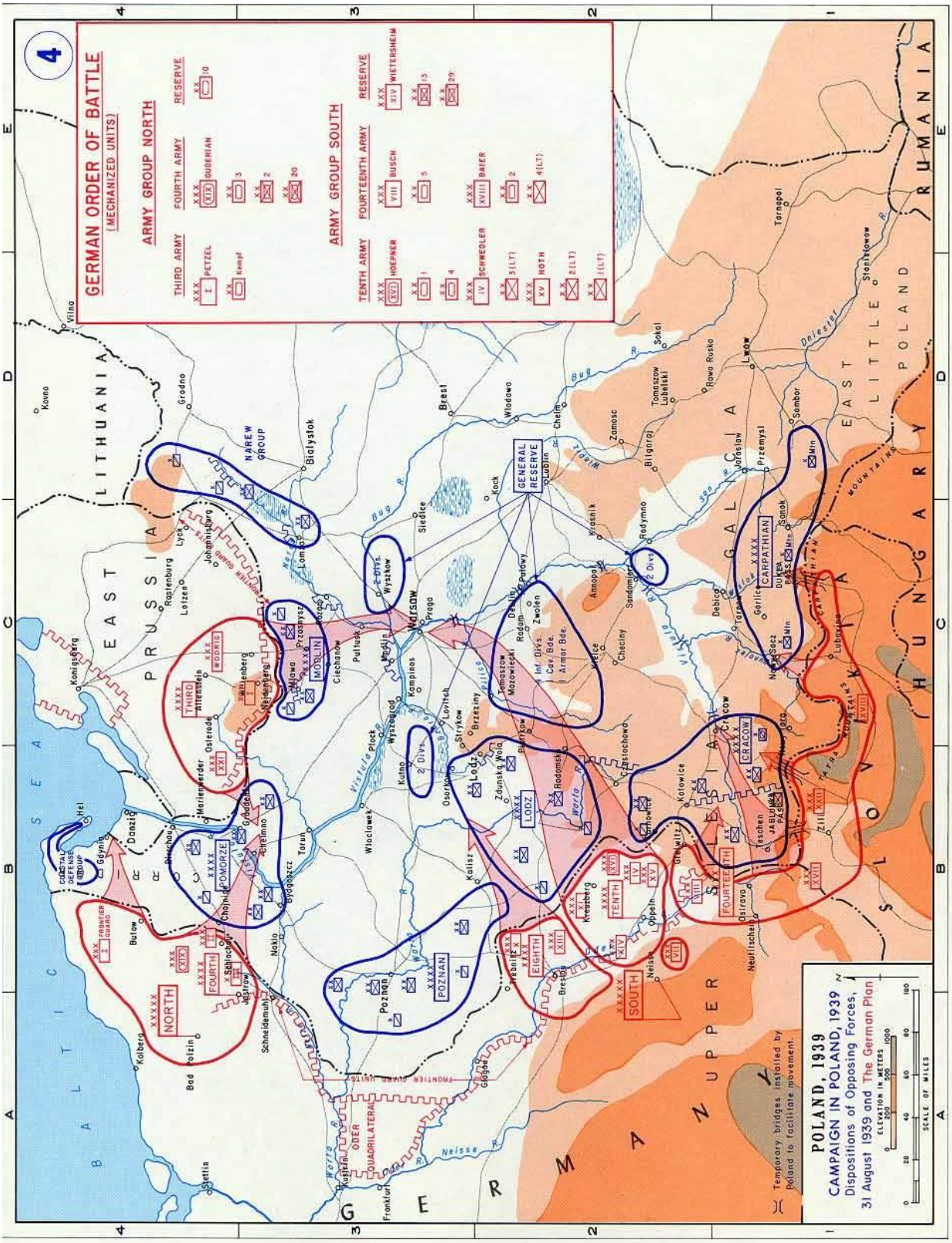

Figure 2.4, German Pincer Movement to encircle Polish army and Warsaw.

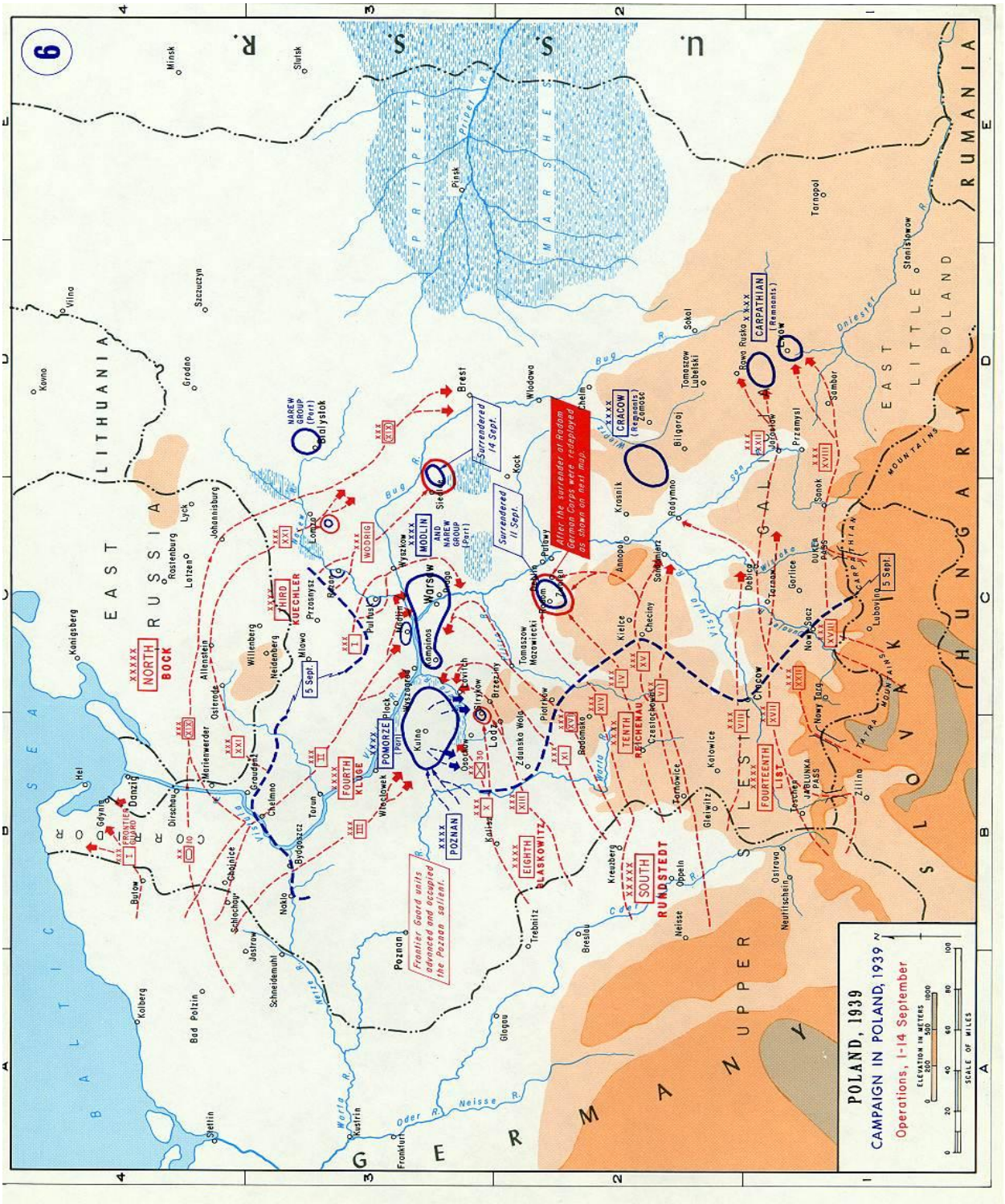

Figure 2.5, The German Advance after the first two weeks of the Polish Campaign.

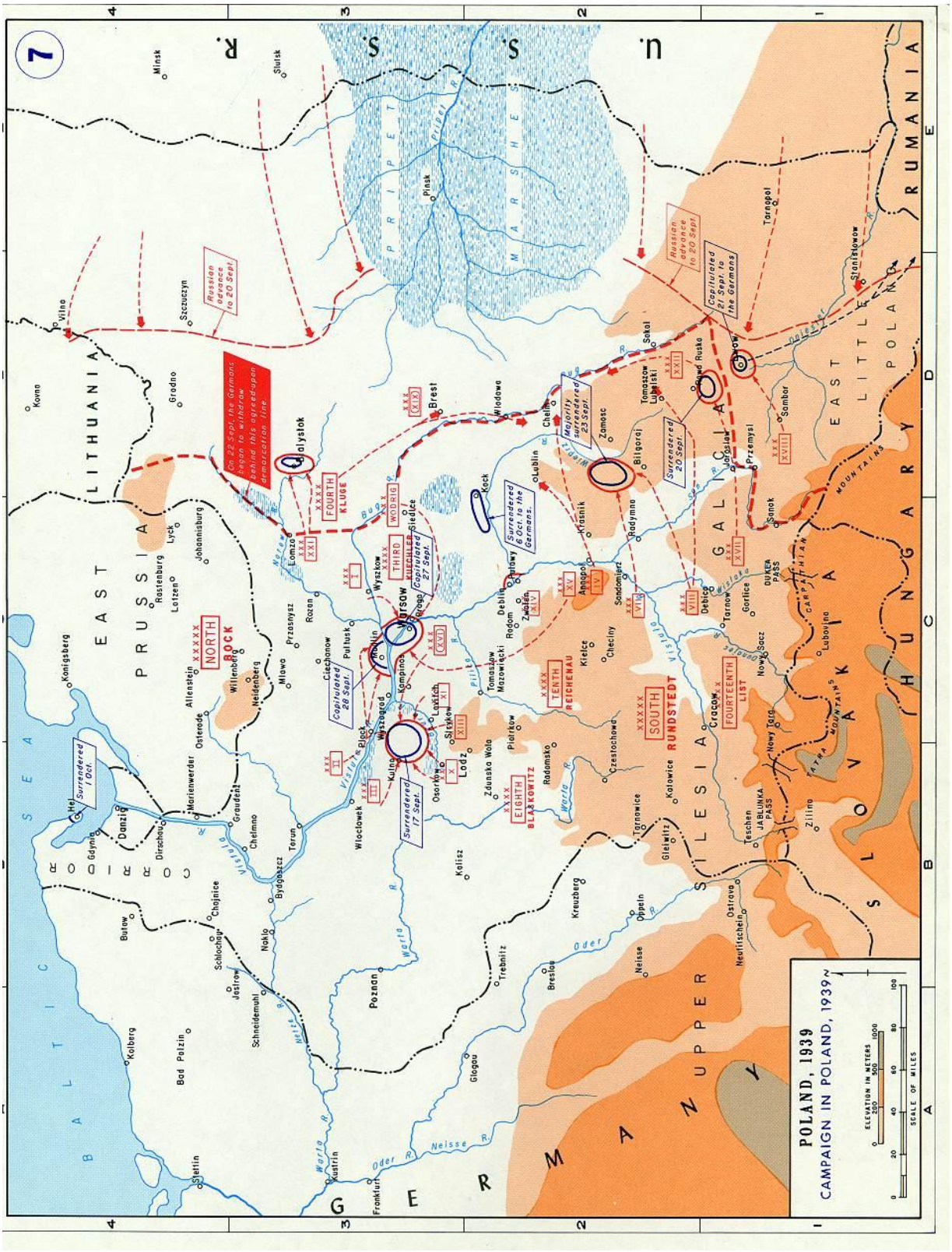

Figure 2.6, Complete encirclement of Warsaw and remaining Polish

Chapter Three

France: Breach of Static Strategy

By the Mobility of the Panzer Divisions

The German invasion of France in 1940 is regarded as one of the most successful triumphs in military history. The Panzer divisions which had so successfully spearheaded the attack against Poland in the east became an astonishingly admired centerpiece in the campaign waged against Germany's old French rival in the west. Having exceeded all expectations and doubts of the German General Staff through an astonishing first trial on the battlefield against a weaker Polish adversary, the Panzer divisions were given a new challenge to fight against a much better armed and defended French army. Within a few days from the start of the German offensive, the German highly mechanized and mobile Panzer divisions caught and overwhelmed the French defenders who were not ready to react to an attack from such a strong and well-organized modern military force.

The Wehrmacht's armored divisions proved to be quite an effective tool to the revival of the old German notion of breaking through an enemy line with sustained mobility, allowing troops to reach the enemy's rear as quickly as possible without ever stopping, and to overwhelm him and force him to route. But when considering how weak the Polish army had been in 1939, it would seem feasible for many to question the actual likelihood of such a success to repeat itself against a much stronger foe. The French army was the largest land army of the time in Europe, outnumbering the Germans not only in number of troops, but also had tanks which were

superior in number and firepower. So the question remains how and why the Germans were able to defeat France in a matter of weeks. The answer lies within the context of both strategy and the organization used by the Panzer divisions which, in these terms, were vastly superior to any mechanized division available to the French.

The battle for France lasted six weeks when including the time from the beginning of the invasion on May10th 1940 to the signing of the armistice on June 22nd 1940, but in reality the essence of the battle was really concentrated within a few days it took that the Panzer divisions to break through the Meuse defensive line at Sedan, Dinant and Montherme. This breakthrough lasted only a few days and was in reality the coming to appreciation of Guderian's dream strategy where the combined effort of a variety of weapons within a Panzer division could work together to get through an enemy defensive line, cutting through all the way to the rear without allowing the enemy time to react. The breakthrough across the Meuse River relied not only on its internal organization of combined mobile weapons cooperating for success, but in addition, strategy and planning of the attack were a vital part for the Panzers' success: such was the strategy belonging to the Stickle-Cut plan.

The Stickle-Cut plan was a brilliant mixture of strategy developed by Erich von Manstein who, like Heinz Guderian, planned operations around the idea of concentrated armored attacks at a point of focus (Schwerpunkt) which, after having evaluated how and where the enemy would react, became a successful clash of static strategy against highly mobile armored warfare. These were vital distinctions when considering the difference between static and mobile warfare. First, static warfare focuses on the importance of defense. Such was the dominating concept during World War I, basing the organization of the defense on the flawed strategy of a long and well

emplaced front line, responsible for guarding every point under threat of an enemy attack. If any point within a defensive line was under attack and at risk of being overrun, reserves in rear were given the responsibility of patching up and reinforcing any point in trouble.[1] When the Great War was being fought on the Western Front in the trenches, both sides involved in the stalemate reinforced any sector at risk with fresh troops from the rear. Such was the strategy of the static defense that survived the First World War in the mind of the French General Staff who not only kept using this strategy, but raised it to an even larger scale. The product of such thinking became a line of defense along the German border known as the Maginot Line.

The Maginot Line was France's response to any new threats that could have originated from neighboring Germany. When in 1926 French Minister of War Andre Maginot made his case to the Chamber of Deputies that French soil must be protected from any enemy armies, he was granted a large fund to construct a long and fortified line of defense capable of resisting anything an attacker could have thrown at it. Although the Maginot Line was thought to be a triumph of modern engineering, it certainly was not a triumph of modern warfare.

The Maginot line was originally meant to cover the entire border from the French Riviera near Italy all the way through Belgium to the English Channel, but lack of funds and time allowed it to be fully constructed only in the area facing the Rheine in Alsace-Lorraine. The line ended where the Ardennes Forest began, leaving a large sector from Longwy to the English Channel free of most defensive fortifications. However, the section that was completed became highly resistant and a self-sustained hard point. Impassible networks of bunkers on the surface were connected underground through a network of tunnels which made communications and

[1] Belvin, *Inside the Nazi War Machine*, 3.

movement of troops quick and efficient. The underground bunkers of the Maginot line were equipped with barracks, kitchens and almost every facility that could respond to the needs of the garrison. The line was constructed in such a way to react to any type of situation: even when the enemy broke through, surrounding support bunkers would cover each other to rid themselves of an enemy breach.[2]

A self-sustained defensive line with supporting elements made sense to many French strategists and, in some aspects, was similar to a Panzer division because weapons worked together by covering each other. Unfortunately for the French army the basic problem remained: a Panzer division could move and it could move faster than anyone expected. This was one of the biggest differences in strategies that won the battle. A line based on static defense was too far stretched and not dense enough to handle a Panzer division at any weak point. The Maginot Line did not extend all the way to the English Channel as originally proposed; in fact the unfortified section from the Ardennes to Belgium was substituted by the majority of the Belgian, French and British divisions. Even in this sector the idea of static warfare was never abandoned. When the Germans opened their attack in the mid of May of 1940, the mobile Panzer divisions cut through the static defensive lines set up in place by the French. The French static defense had no way of reacting to the German advance. This was also due to another key difference between static and maneuverable warfare entailing that a static army cannot be converted to one of maneuver.[3] Once an army was developed with weapons and troops set up for an immobile and fixed defense, if it has failed its primary duty of defending, it could not be expected to chase

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[2] Rudolph Chelminski, "The Maginot Line," *Smithsonian* 28 (1997): 90.

[3] Belvin, *Inside the Nazi War Machine*, 4.

after an enemy that had already broken through: this was the way that brought to the success of the Panzer divisions and the defeat of the French army. But, just as a static army cannot be converted to that of maneuver, an army of maneuver equally cannot be converted to one of static defense. An army of maneuver must absolutely be successful in breaking through the enemy or else it may have to run the risk of suffering the potential loss of mobility and eventually defeat. This became the downfall of the Wehrmacht later on in the war, which, once put on the defensive after the advance into Russia came to a halt, it could at its best form a temporary elastic defense destined eventually to fail.

Manstein understood the advantages of speed and mobility of the Panzer division which could be used in exploiting the weaknesses and disadvantages of the French static defense. The best spot to break through the enemy line was through the Ardennes Forest and across the Meuse River. The Ardennes Woods were perfect not only because they were the weakest point, but also because Manstein knew that the enemy was not expecting an attack through such impenetrable terrain, allowing the German advance to keep an element of surprise while using speed to penetrate into France before the enemy had any sort of chance to react effectively. General Philippe Petain, whose respected reputation as a military commander during World War I made few other generals doubt his judgment, considered the Ardennes to be impenetrable because he based his assumptions on the fact that they were made up of large mountains with only small narrow roads to travel in between them. If the Ardennes were not enough to stop tanks, General Maurice Gamelin also considered the Meuse to be Europe's best tank obstacle; after all, the advance through Poland was thought to be possible only because of flat terrain and low rivers. But failure to properly be acquainted with the area and maneuverability of the Panzer divisions made their assessment of the situation a false one.

The Ardennes were not as impassible as expected: they were in fact made up of small hills and a large network of roads. Allied experts who realized the risk of a possible breakthrough because the terrain was favorable to Panzer maneuvers were ignored by the French High Command.[4] Panzer divisions became even a larger threat to the enemy when they exploited road systems just like those in the Ardennes making war on narrow fronts even easier to carry out. These roads were particularly of advantage to the German advance because they connected between each other and converged into the many towns along the Meuse. This network of connected roads allowed armored divisions to quickly redeploy to any road leading to an enemy's weak point.[5] Knowing that an advance through the Ardennes was indeed possible, Manstein also considered the fact that an unaware French army would likely be concentrated elsewhere and the element of surprise could be exploited with speed. His brilliant idea, however, was not introduced into the plan for the invasion of France until the occurrence of the Reinberger incident.

The Reinberger incident favored Manstein because it allowed him not only to introduce his version of the plan, but it also revealed the allies' plan of defense. For a while, Adolf Hitler had wanted a plan for the invasion of France. While the war in Poland was still carrying on, he approached the Chief of Staff Franz Halder and the commander of the army Walther von Brauchitsch to organize a plan to breakthrough into France. Both officials did not favor a war against France because they believed that Germany was unprepared and feared defeat. They were forced to draw a plan which would cut into France called "Case Yellow" or "Fall Gelb". Von Manstein, a rival of Halder, wanted to exploit the enemy's unawareness of the passable

[4] Ronald E. Powaski, *Lightning War: Blitzkrieg in the West, 1940* (Hoboken N.J.: J. Wiley & Sons, 2003), 22-26.
[5] Miksche, *Attack, A Study of Blitzkrieg Studies*, 53-55.

Ardennes. But Halder, who openly disagreed with Manstein and wanted him out of the picture, had him promoted and temporarily transferred to the command of an infantry unit. Halder's final version of Case Yellow did not consider the weakness of the French's Ardennes sector, but instead planned an attack through Belgium, following the path of the old Schlieffen Plan which then cut into France.

The plans for Case Yellow became involved in the Reinberger incident when on January 10th 1940, Luftwaffe Major Hellmuth Reinberger was put in charge of delivering the top secret plans for Case Yellow to a meeting that was going to take place further into Germany. He was ordered not to fly with such important documents, but instead was offered a ride by plane to his destination, which he accepted. The beautiful January snow covered landscape soon became interrupted by fog, which forced the plane to have an emergency landing. The pilot lost track of the Rhine River and was forced to land on an unknown landing strip where, once on the ground, was unclear of his location. The two Luftwaffe officers were quickly seized by Belgian troops who captured the plans. They were revealed to the rest of the Western Allies who, as soon as the news was known of a planned German attack, ordered French and British troops to rush to the defense of the Belgian border. This confirmed Manstein's prediction of where the enemy would defend. Even if the attack never came because the plan had yet to be approved, the Allies made a fatal mistake of giving away their defensive plan after having rushed their armies into place.[6]

That the plans had fallen into enemy hands infuriated Hitler and forced him to look for a different strategy. Such was just the opportunity Manstein needed to insert his plan of cutting through the Ardennes forest through southern Belgium and Luxemburg. Manstein was given the

[6] Belvin, *Inside the Nazi War Machine*, 20-25.

opportunity to present the plan to Hitler through personal connections. Although Hitler had also considered the Ardennes as a possible point of interest, he did not fully understand Manstein's plan, even if he took full credit for it once the campaign in the west was won. The plan drawn by Manstein, which was renamed the "Stickle-Cut Plan", was reviewed by Heinz Guderian whose point of view as a tank man certainly helped revise the original Case-Yellow. Guderian insisted that the thrust through the Ardennes would cut the enemy's defensive line in two by passing through the middle if all of the Panzer divisions were deployed at a concentrated point of effort.[7]

Guderian's Panzer strategy was ideal when considering the possibility to exploit the weakness and organization of the enemy's defense. It was clear to the Germans that the enemy intended to rush into Belgium, leaving the Ardennes sector weak and vulnerable. Guderian and Manstein agreed that the Stickle-Cut Plan called for a cut across the Meuse after the safe passage through the Ardennes, followed by an advance west and then towards the English Channel, trapping the main Allied defensive force in a giant noose which eventually tied from around Belgium to Dunkirk. Both generals wanted the Allies to keep believing that the attack would come further north, so, in an effort to keep them pinned in Belgium, the attack opened with a distracting diversion in the north started by airdrops: only then the real advance of clustered Panzer divisions rapidly advanced through the Ardennes Forest further to the south. However there was debate within the German General Staff whether or not the Panzers could successfully advance all the way to the English Channel. Guderian and Manstein strongly opposed other commanders who wished to halt the Panzer divisions right after having crossed the Meuse: they argued that it was a senseless waste, not only because this would lose the element of surprise, allowing the enemy in Belgium to react and advance south, but also to lose mobility and

[7] Guderian, *Panzer Leader*,89.

defeating the very principle strategy the Panzer divisions were based upon. If anything was capable of reaching the English Channel with great speed it was Germany's mechanized divisions.[8]

The plan for the defense of the Allies' extended front north of the Maginot line that the Panzer divisions would have to face was organized by General Maurice Gamelin and supported by Philippe Petain. It was named the Dyle-Breda plan and it was the product of old static military thinking where, in the absence of fortified interconnected bunkers, the best defense was thought to be the creation of a long line along the Dyle River. But the Dyle was too far for the entire allied army to reach, so it was agreed that the French and BEF (British Expeditionary Force) would rush near Breda to join the Dutch and Belgian defenders as soon as a German attack began. This line of defense was charged with the task to halt and exhaust the German advance to later counterattack and a push into Germany until the Wehrmacht surrendered[9]. The flaws of this plan, however, were not limited to the placement and movement of troops, but to the strength and structure of the French divisions as well.

The Panzer divisions were particularly successful in France because the Allied divisions on the defense were not organized to handle the shock wave of a strategically superior and better equipped fighting force. It is true that in the earlier stage of the attack, the German army faced a weaker defense at the Ardennes, but even some of the stronger French divisions that were moved out of the Belgian pocket could not counter the attack in May of 1940. The French were grouped into different types of divisions based on strength and labeled as "A", "B" or "C" divisions. The majority of these were type "B" divisions and were generally composed of infantry without

[8] Belvin, *Inside the Nazi War Machine*, 32-35.
[9] Powaski, *Lightning War*: 3-5.

proper training, low mobility, and little transport which made them slow. However, although the French had a lower quality army, it is true that in terms of numbers it had the upper hand.

The French army outnumbered the German army not only in the quantity of infantry, but also in tanks. French tanks were also individually superior to the German Panzer in armor and fire power. It would then still seem logical to question why the Germans won the Battle for France. The real difference between these tanks which gave the final edge to the Germans remained tied to the manner in which they were used. The French High Command, just like many in the German High Command, never believed in the possibility of grouping tanks together with each other and combined with supporting elements; instead, they firmly insisted that the tank needed to be used as a supportive weapon as the steel backbone of the infantry to help resist the onslaught of modern warfare.[10] Such prevailing strategy adopted by the Germans is understandable even when the strongest of tanks from each side are faced with each other, particularly in the coming battle at the Stonne Heights after Guderian's three Panzer divisions crossed the Meuse at Sedan.

Some of the main flaws of the French tanks were products of their design of the tank as an infantry support weapon. Because they were not intended to move long distances, fuel tanks were small; when the French tried to redeploy their tanks against the Germans who had broken across the Meuse, there were numerous instances in which the French tanks ran out of fuel. Communications was a second disadvantage which made the French tanks obsolete. The Panzer divisions always had the upper hand because commanders were always in contact with each other via radio. Panzer commanders on the battlefield took their own initiative and when they

[10] Steven J. Zaloga, *Panzer IV vs Char B1 BIS* (Oxford: Osprey Publishing, 2011), 4-5.

needed to quickly issue orders they were easily processed, especially when any sort of change of events required immediate attention. All orders given to the French commanders from high command required forty eight hours just to reach the front. French front line commanders never followed the doctrine of taking initiative or keeping tanks in contact with one another being that tanks were not seen as capable of working together.[11] Quite simply, the French believed that with heavier armored tanks positioned along strong defensive lines, they had a better chance than the Poles to stop the Germans.[12] But this was proven to be a fatal mistake when the Panzers, although individually weaker, were grouped together and concentrated the attack at one point in the line.

Both the French and British were barely equipped with any sort of division resembling that of a German Panzer division. This is not to say that examples of mechanized units grouped together with other vehicles were nonexistent, but even as a group they were still used for defensive operations. The British also had some vehicles like tanks and armored cars, but they were so few even when grouped together that a single Panzer division had more vehicles than the entire BEF. Even if on the defensive, the French attempted to create a couple of mechanized divisions with more vehicles, but only one of these divisions had a large enough number of armored vehicles to pose a threat to the Germans when the war started. It was composed of three regiments of tanks, one regiment of armored cars, a regiment of motorized artillery and one regiment of dragoons.[13] Even with this possibly favorable combination, the fact remains that the Wehrmacht was equipped with multiple mechanized divisions which were all designed for offense.

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[11] Belvin, *Inside the Nazi War Machine*, 42-43.
[12] Powaski, *Lightning War*, 26.
[13] Ernest R. May, *Strange Victory: Hitler's Conquest of France* (New York: Hill and Wang, 2000), 384.

Despite the attempts of the French to organize something close to a mechanized division, there was no comparison with the organizational structure of the Panzer divisions which had improved since the campaign in Poland and added many new types of tanks and armored cars. Considering Guderian's 1st Panzer division which was one of the three that broke through at Sedan, its center piece which was already present in Poland was a brigade made up of two Panzer regiments, divided into a couple of light Panzer I and II tank companies and a single medium Panzer III and IV companies. The Panzer brigade advanced with the armored reconnaissance battalion. Two armored car companies of ten armored cars each were combined with a motorcycle company and an engineer platoon. A rifle brigade of mechanized infantry that accompanied the Panzer brigade was made up of a rifle regiment, a motorcycle battalion and a heavy infantry gun company.

The supportive elements such as artillery, anti-aircraft and anti-tank guns, in addition to the tanks, panzer grenadiers and armored cars, gave the necessary support which made the Panzer division the unique self-supportive thrust unit capable of responding to anything the enemy used to attack. The anti-tank battalion which had three companies of twelve light anti-tank guns each, was also coupled with a heavy anti-tank battalion equipped with the infamous 88 mm. Flak gun to deal with long range hidden enemy tanks. Arial defense was a crucial part to avoiding an enemy plane attacks which could endanger the advance. The anti-aircraft battalion carried three battery units of twelve Flakvierling-35 each. The artillery regiment of the Panzer Division was also essential in clearing well defended targets. This was made up of three battallions, two of which numbered twelve field guns each. The third battalion was of heavy artillery, equipped with twelve howitzers. A signal battalion made up of one wireless company and one telephone company made communications easier. Finally, an armored mechanized

engineer battalion was essential for blowing bunkers was made up of three motorized engineer company, two bridging columns and another light engineer column truly made the Panzer division ready for almost anything and vastly superior to any mechanized French division.[14]

Germany had ten fully operational Panzer divisions at the start of the occupation of France. Seven of these ten were grouped together in Panzer Group Kleist as the spearhead of Army Group A and the entire breakthrough across the French border, whose field of operation concentrated in the Ardennes south of Namur and straight to the Meuse River. However, the "Sichelschnitt" plan exploited the Allies Breda-Dyle defense as Army Group B was ordered to advance further north into Belgium with the remaining three Panzer divisions to trick the enemy into believing that Germany was reattempting the old Schlieffen Plan, while the real attack concentrated further south. The rouse of Army Group B opened on May 10th 1940 with an attack from the Luftwaffe and a mass deployment of German glider born troops (Fallschirmjägers).

The strength of attack in the north was quite convincing to the allies that the main attack had started, as Fallschirmjägers landed all over the Netherlands and Belgium capturing bridges, airfields, and other fortified positions. The astonishingly successful landings of Kurt Student's 7th Fallschirmjäger Division with very few casualties at The Hague, Rotterdam, Utrecht and Noerdick further threw the enemy into a state of confusion. New paratrooper attacks included those of Theodor von Sponeck where another twelve thousand glider born troops landed and secured enemy hard points.[15] Although the attack in the north was a small diversion, it had demoralizing effects on allied troops. The landing of more paratroopers on the Belgian fort of Eben Emael, which resulted in the surrender of a large garrison of troops to a few German glider

[14] Zaloga, *Panzer IV vs Char B1 BIS*, 24-25.
[15] Belvin, *Inside the Nazi War Machine*, 40-52.

born troops, forced the French General Gamelin to mobilize to the Breda-Dyle defensive positions the next day on May 11th. [16]

The BEF with nine infantry divisions under John Standish marched to the Dyle while Giraud's 7th Army with infantry and tanks marched to Breda. They engaged the diversionary remaining Panzer divisions of Army Group B which formed Panzer Korps Hoepner. These few Panzer divisions never marched far and took casualties, but then again, their mission was only to further convince the Allies of a real attack who so far had only encountered German paratroopers: an attack with tanks seemed more realistic. The attack may have not been from the German main force, but this handful of tanks still caused problems for the allies and gave a first glimpse of how successful a Panzer division can be, especially with aerial support from the Luftwaffe. If only three Panzer divisions of Army Group B could wreak such havoc in the north, the combined effect of the remaining seven Panzer divisions of Army Group A further south had a devastating effect on the French defenders.

By May 12th, as the ruse in the north was in effect, Gamelin still did not expect the real attack through the Ardennes further south. The seven Panzer divisions of Panzer Group Kleist crowded the roads of the forest as the "largest concentration of fire power ever seen in battle."[17] It was these few days that were at the heart of the Battle for France when the well prepared Panzer divisions devastated the enemy at an astonishing rate. Panzer Group Kleist was divided into three Panzer Korps, each which broke through at a town on the Meuse. Panzer Korps Guderian is probably the most famous example, where the 1st, 2nd and 10th Panzer divisions at Sedan made the French defense an absolute disaster. Panzer Korps Reinhardt with the 6th and 8th

[16] Powaski, *Lightning War*, 70-84.
[17] Ibid, 86.

Panzer divisions broke through a little further north at Montherme to assist Guderian with an additional two Panzer divisions. Finally, Panzer Korps Hoth took the largest casualties, but was also the fastest and farthest to advance. The 5ft and 7th Panzer divisions concentrated at Dinant and were led by Erwin Rommel, who in these few days solidified his reputation as a reputable tank commander.

Guderian's attack began the advance through the Ardennes on May 11th. After having crossed the bridge at Semois, his divisions continued their path to Sedan the following day with the enemy still failing to realize that this was the sector of the real attack.[18] The defense of this area was left to General Hutzinger's 2nd Army. Along with using the river itself, the defense was mainly comprised of trenches, barbed wire, anti-tank guns and bunkers. It was not the strongest defense along the line, and, along with doubting the possibility of an attack at an area with such rough terrain, air support, artillery and ammunition were thought to be needed in small quantities.[19] Guderian's three Panzer divisions arrived north of Sedan, after which a violent attack from the Luftwaffe on May 13th poured a large amount of bombs on the French hard points, suppressing them. The enemy was however still entrenched and the Meuse River presented itself to be an obstacle. Luckily, the Panzer divisions were always prepared to deal with any situation, including a river crossing.

The river crossing at Sedan was a perfect opportunity for the many elements within the German armored divisions to work cooperatively. The passage through the Ardennes forest was generally successful, but not perfect because some supportive elements had been slowed down and fallen behind due to all of the heavy traffic. The river crossing began when all elements

[18] Belvin, *Inside the Nazi War Machine*, 63-70.
[19] Powaski, *Lightning War*, 124-128.

arrived. Germany artillery batteries were put in place to keep supportive fire on designated targets like bunkers. Panzer engineers also played their role in the river crossing as soon as they arrived.[20] The majority of elements of these Panzer divisions were required to arrive together because crossing a river required the support of most units. The tanks had the role of providing covering fire as Panzer grenadiers and mechanized infantry crossed the river with rubber boats. On the far side, always under the cover of the tanks, they needed to infiltrate and eliminate targets like stronger bunkers and anti-tank positions with explosives. Once an area on the other bank of the river was secured, engineers could begin the construction of pontoon bridges. As soon as a bridge head was established, grouped Panzers were trained to quickly cross the river in a line. On the far side, the tanks needed to find areas with good cover, but needed to be always on the move to protect the Panzers in case of an enemy counter attack.[21] Such were the steps to be taken by the Panzer division forces as ordered in their training of Panzer battle tactics.

The first Panzer division followed all these steps, and with the support of artillery and tanks it pinned down many enemies on the far side so that the first mechanized infantry units crossed the river and neutralized many fortifications. By May 13th, with the construction of the pontoon bridge, the first tanks rolled across the Meuse River. The infantry that had already moved across continued to engage the enemy as they were trying to secure strategic hills overlooking Guderian's bridgehead.[22] With the first panzers across, the ill prepared French defenders panicked and either withdrew or simply surrendered. In an effort to stop the flow of German tanks into France, Allied High Command organized an aerial attack on the pontoon

[20] Belvin, *Inside the Nazi War Machine*, 73-79.
[21] Wolfgang Schneider, *German Small-Unit Armor Tactics in World War II* (Mechanicsburg, PA: Stackpole Books, 2005), 16.
[22] Belvin, *Inside the Nazi War Machine*, 80-84.

bridge. Even in this case, a Panzer division had proven itself to be able to handle any sort of situation: the division's heavy anti-aircraft "Flak" battalions were able to shoot down the allied planes, shielding the advance from any possible aerial threat.[23]

The first Panzer division crossed the Meuse River effectively. The 10th Panzer division had a tougher time crossing because of heavier enemy fire, but was still able to succeed in completing its objective thanks to the rapid deployment and organization of reinforcements. Guderian's 2nd Panzer division had even less luck crossing the river on time because some of its supportive elements lagged behind in the Ardennes.[24] This was another example of the importance of all units working together to get through the enemy line efficiently and as soon as possible. With such a rapid breakthrough of Guderian's three Panzer divisions, after finally accepting that a bigger attack was indeed possible through the Meuse sector, General Gamelin began to react by trying to organize a defense. However, the French were very slow in their response to the German attack. Communications remained a central issue, especially when the technological means were so scarce: couriers were still being used to deliver messages, which, compared to the radio, took a very long time to be received. But old military thinking also played its role in Gamelin's slow reaction: it is important to remember that unlike many German commanders who issued commands from the battlefield and based decisions on what opportunities presented themselves, the French awaited detailed orders from high command which had no real idea of what was happening on the battlefield. The slow reports received from

[23] Guderian, *Panzer Leader*, 104.
[24] Powaski, *Lightning War*, 130-139.

the battlefield made high command slower to respond, but also issued orders to units which were only on a map and had already retreated.[25]

After Guderian had broken across the Meuse, one Panzer division forced the French defenders to abandon their positions in panic, opening the path for the other divisions to cross the river. The French began to organize a series of uncoordinated counter attacks which all failed their operational directives of retaking key positions and forcing the Germans to turn around: many of these French counterattacks failed even before they began as a cause of their sluggish mobilization and organization. Perhaps one of the best examples of a clash between the French and German military ideology regarding tank warfare occurred in the fighting for the key position of Bulson on May 14th. The 3rd French armored division was ordered to advance, but lost the race to the 1st Panzer divisions because it was very slow: the French who used the tanks as support weapons tied to the infantry even included in their service regulations that a tank needed to regulate its speed to that of the infantry. The Germans had tanks, infantry and anti-tank guns massed together, which devastated the French counter-attack.[26] Major General Mellenthin recalls the slow pace organization and advance of the French counter attack where he claimed that "the French found it difficult to improvise such an attack at short notice; their tanks moved slowly and clumsily and by the time they got into action, our anti-tank guns were arriving, as were the 1st elements of the 1st tank brigade."[27]

A second example of triumph of Guderian's ideology in France appeared in the fight for the Stonne Heights when the 10th Panzer division was ordered to occupy the strategic location. A

[25] Ibid, 148.
[26] Karl-Heinz Frieser, *The Blitzkrieg Legend: The 1940 Campaign in the West* (Annapolis: Naval Institute Press, 2005), 187-193.
[27] Mellenthin, *Panzer Battles*, 15.

combination of a slow response, weak leadership and inferior tactics collapsed the French's attempt to defend the area, but it was also revealed the weakness and defects of the French tanks to the Germans. During the fighting, the heaviest of the French tanks, the CHAR B1 BIS, engaged the heaviest of the German tanks the Panzer IV. The first obvious difference between the two is that the CHAR B1 tanks had a thicker armor and heavier guns. A sixty millimeter armor plate covered the front and sides, while a fifty five millimeter armor plate guarded the rear. This tank was also equipped with two seventy five millimeter guns. Compared to the 25 to 35 mm armor plating on the German Panzer IV and its single 75 mm gun, the French tank would be expected to be the victor. But once again, military ideology plays a key role in literally shaping the tank. The CHAR B1 was never destined to be a battle tank or grouped together with other tanks to fight enemy German panzers. Instead, tied to the infantry, it was designed as a support vehicle that would withstand enemy fire and had no need to move fast. This is also a reason why fuel was never thought to be an issue. The fuel tank was smaller and consumed more fuel than the Panzer IV. In contrast, the Panzer VI lighter armor maybe it more vulnerable to anti-tank fire, but it had a modern shape and configuration so that it could move fast in a group of other tanks. It carried more fuel and also consumed less, making capable of

Figure 3.1, photograph of the heavier German Panzer IV.

moving larger distances. It was these differences which allowed the Panzer division to claim victory by the end of the day.[28]

Guderian's successful breakthrough at Sedan sent the enemy in full retreat after three bridgeheads turned into a sixty two mile long pocket into French territory within twenty four hours.[29] The Panzer divisions did exactly what they were meant to do. The advance was so fast that the German General Staff ordered to halt in fear of overextending the attack. This was strongly opposed by Guderian who argued that to halt the tanks would go against the very strategy and purpose of Panzer tactics. The tanks were meant to pursue the retreating enemy and engage any reinforcements so that now secondary defense could be established. It was of no surprise that Guderian ignored this order and advanced to Montcornet where he met with the 6th and 8th Panzer Divisions of Panzer Korp Reinhardt. The commander of the 6th Panzer division followed Guderian's same example after the breakthrough at Montherme. The halting of his Panzer division seemed like a large waste of momentum after the enemy was on the run. He deliberately pursued the enemy after having crossed the Meuse[30]. With one of his "Kampfgruppen" or "battle groups", consisting of a detachment of combined arms he attacked the French 2nd Motorized Division which was one of the best motorized divisions available to the French. But even in this circumstance, French deployment was slow and fuel shortages once again became a problem. The fast fully fueled and independent German tanks engaged the French tanks which were being unloaded from a train: train transport was required in order to not

[28] Zaloga, *Panzer IV vs Char B1 BIS*, 8-19.
[29] Powaski, *Lightning War*, 158.
[30] Belvin, *Inside the Nazi War Machine*, 97.

waste fuel. The French tanks that were already unloaded were left scattered in the field where some were destroyed and some were abandoned.[31]

As Reinhardt and Guderian met at Montherme, at about forty kilometers west of Sedan on May 15th, Charles Huntzinger's weakened 2nd army began to panic in the south, but only as Andre Corap's 9th army further to the north was simultaneously suffering a devastating blow from Erwin Rommel's breach at Dinant by his 5th and 7th Panzer divisions. Just as Guderian had put an armored fist through the Sedan sector in the south, Rommel deserves the same recognition as his two Panzer divisions cut deep into French territory and put a final blow to the collapsing Meuse front. The crossing of the Meuse by Rommel's two Panzer divisions is another perfect example that incorporates all the elements of success of German strategy which takes advantage of enemy weaknesses. As a Panzer commander, Rommel knew how to exploit the situation by taking immediate action instead of waiting for orders from high command: he was given the objective of crossing the Meuse, but

Figure 3.2, German soldiers inspecting the heavy and slow moving French Char 1B

[31] Powaski, *Lightning War*,123-125.

how he would do it was left to his own jurisdiction.[32] With all bridges at Dinant having been blown, he quickly found the closest alternative. He decided to cross at two points by using a weir the French had left intact at Houx and constructing a pontoon bridge close to Dinant.

Full cooperation of different arms made the crossing an absolute success: as the mechanized infantry began the crossing in rubber boats under fire, they were covered by the rest of the Panzer division's tank battalion, where each tank moved along the river bank at a distance of fifty yards from each other, turrets pointed to the left and guns firing on the French defenses forcing them into submission. The French withdrew and the pontoon bridge was completed, allowing Rommel's panzers to cross the Meuse on May14th.[33] Any French tanks in the area were neutralized and some cases abandoned by their terrified crews. The infantry guarding the bunkers was known as "fortress infantry" and is also the product of static military thinking: fortress troops were meant to defend a fixed position and were not meant to redeploy being that transport was not a concern, forcing them to leave all their equipment behind as indeed they did when the Germans attacked. In order to keep the enemy on the run and preserve the element of surprise, Rommel continued to chase after the enemy and smashed through a French counter attack at Houx which mobilized a day late and was highly unsuccessful because the enemy tanks ran out of fuel once again.

With Rommel's success, the breakthrough between Namur and La Ferte, which was the Schwerpunkt or point of main effort of the German attack, made the Stickle-cut plan thought up by Mallenthin and Guderian work just as originally predicted. May 15th marked the official collapse of the French defensive line along the Meuse and the beginning of the thrust to the

[32] Belvin, *Inside the Nazi War Machine*, 123.
[33] Powaski, *Lightning War*, 107-112.

English Channel to surround the Allied armies in Belgium: the French realistically lost the battle for France in the five days it took the Panzer divisions to advance through the Ardennes and complete the crossing of the Meuse River. What followed was an advance to the channel ports of northern France which was surprisingly opposed by members of the German General Staff and Hitler: cutting to the coast would mean exposing the left flank which could be potentially vulnerable to any sort of French attack from the city of Paris after the Allies finally figured out the focus of the German plan. Hitler and his generals were only eventually convinced once they were persuaded that the only resistance encountered was made up of small pockets of infantry and a counter attack to the flank was highly unlikely seeing how slow the French were to organize their plans.[34] The rush to the English Channel from May 15th to May 20th sealed the fate of the Allies as the speed of the German divisions went unmatched by the Allies. There were only a couple of scenarios where the Germans may have been slowed down and those occurred when the Allies learned from the Germans and attempted to throw together their own versions of a mechanized division. Guderian's advance was briefly threatened by the French High Command decision to let Charles de Gaulle organize a mechanized division of his own. For years his argument that tanks should be massed and concentrated at a point of interest to breach the enemy was ignored. Only in the midst of battle was he allowed to organize such a division, but although his idea was indeed correct, it was too late to counter the advance of the Panzer divisions. By the time the tanks were unloaded from the trains and slowly made their way to face the Germans, De Gaulle surprised and destroyed some of the advancing Panzers. De Gaulle's 2nd Motorized division was created on the spot and was not nearly as organized or equipped with a variety of arms like the German divisions. Low fuel and failure to detect where

[34] Belvin, *Inside the Nazi War Machine*, 135-143.

all tanks were due to lack of radio, this newly formed division was not prepared to face the volley of combined fire from German tanks, anti-tank guns, and aerial support. By the end of the battle, Guderian destroyed sixty of De Gaulle's tanks forcing him to retreat after having inflicted some losses on the Germans. Guderian reached the English Channel on May 20th, completing his objective with a never before seen speed on a battlefield.[35]

Even Rommel began his rapid advance to the sea causing devastating blow after another to the remaining French defenses. Particularly successful were the thrust across the extended Maginot line, where a breach was created with very little effort through the weak network of bunkers as the French watched in astonishment the roll by of Rommel's Panzers: there was no exchange of fire in this particular point because the French were overwhelmed by the rapidity with which the tanks advanced that the Germans thought the bunkers were abandoned. Rommel racalled that "the way to the west was now open; the tanks now rolled in a long column through the line of fortifications."[36] His 5ft and 7th Panzer Divisions, like Guderian, also encountered an enemy British mechanized division at Lille that, because it was organized in the chaos of battle, remained inferior to the German divisions. Organized and directed by British tank commander Giffard De Martell, it surprised Rommel and in attempt to break out of the German noose tightened around Belgium almost caused severe losses. But the Panzer Divisions were equipped with Flak 88 millimeter anti-tank guns, which, in addition to the tanks themselves, devastated the enemy British tanks.[37]

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[35] Ibid, 144-149.
[36] Erwin Rommel. "Operation Yellow: Crossing the Meuse, France, 13 May 1940," *The Mammoth Book of Eyewitness World War II*, ed. Jon. E. Lewis (New York: Carroll and Graf Publishers, 2002), 59.
[37] Christer, Jorgensen, *Rommel's Panzers: Rommel and the Panzer Forces of the Blritzkrieg 1940-1942* (St. Paul: MBI, 2003), 55-64.

The remaining weeks in the Battle for France involved the encircling of the Allied forces at Dunkirk and the mopping up of remaining French forces all across France, including the garrisons remaining in the Maginot line who surrendered. With such an event, resistance crumbled all across France. Most of the French armored divisions were concentrated in Belgium and were put out of commission. The German advance into the rest of France encountered little resistance and moved as fast as the Panzer could travel. Mellenthin recalls that "the German advance was only limited by the distance the Panzer divisions could cover in a day". To such a statement it would seem confusing as to why Hitler would order the Panzers to halt around Dunkirk when the remaining Allies were at the mercy of the German divisions. The British attack at Lille on May 26th may have forced Hitler to panic at the idea that the flank could have been attacked, but the diplomatic motivations to conclude a peace with Great Britain also may have influenced Hitler. Maybe on a diplomatic level such an idea may have had a feasible outcome, but on a military level such a directive can be considered a catastrophe being that the German Panzer divisions, through their incredibly fast paced advance, could have captured such a huge number of prisoners and put a devastating blow to the Britain's will to fight.

The Battle for France proved that armored warfare was the new dominant factor that could achieve victory in open battle. Whether strategists on both sides were divided in accepting this reality, the Panzer divisions did their job and demonstrated an upmost proficiency in deploying their tactics through speed and fire power, grouping their tanks together to breach the enemy line in the shortest amount of time possible. The French had more powerful tanks than the Germans, but lost the fight for their country because they did not know how to use armor properly or accept the advice of those like De Gaulle and De Martell. As Mellenthin states "the French and British generals not only refused to accept our theory, but failed to make adequate

dispositions to meet it."[38] The failure of the Allies to appreciate mobility instead of a static defense in the art of war led to their eventual downfall. The reintroduction of mobility supported by Mellenthin and Guderian into warfare through tanks and combined mechanized arms was proven to be the dominant strategy of its time when the war broke out in France in that May of 1940.

[38] Mellenthin, *Panzer Battles*, 22-24.

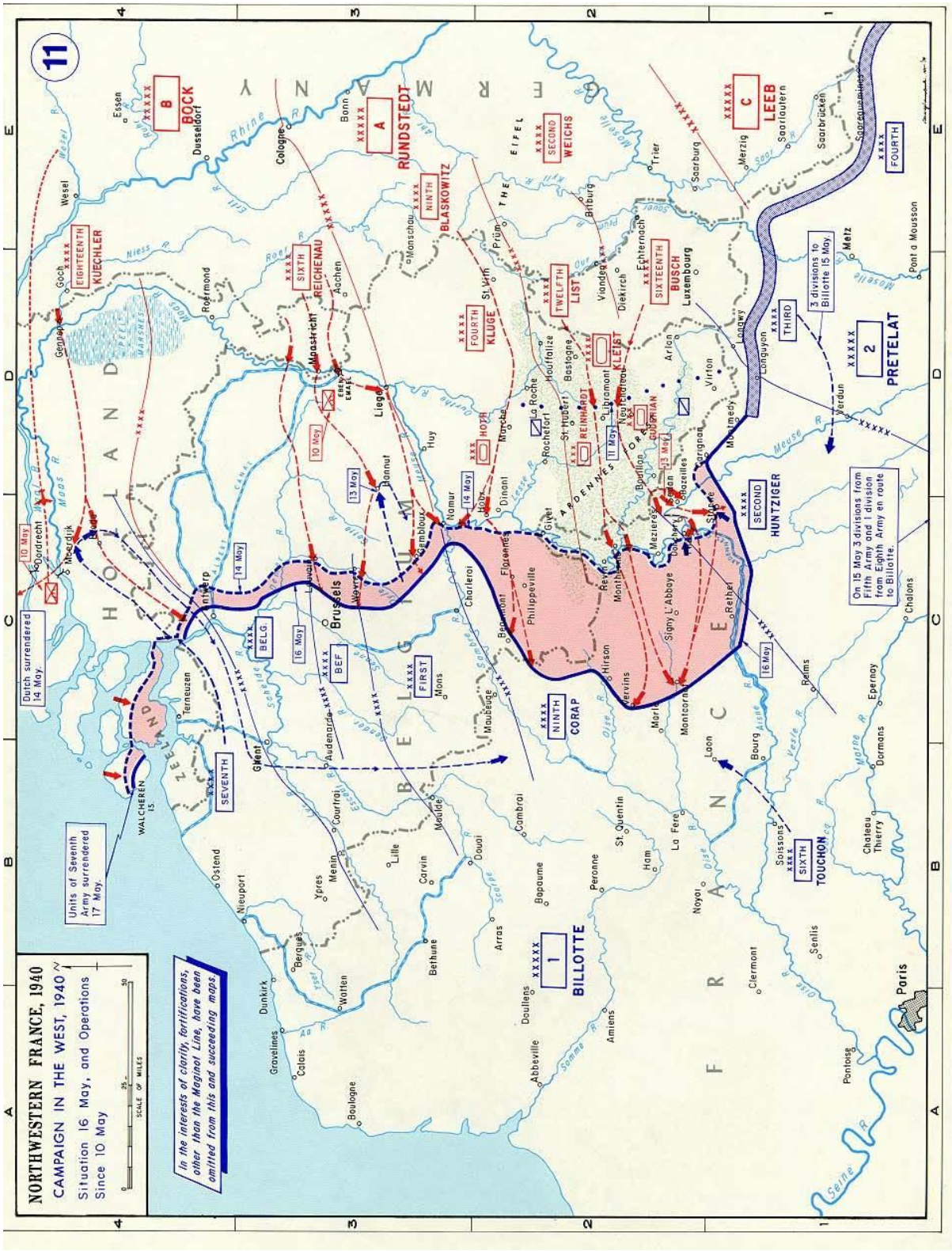

Figure 3.3, Case Yellow plan of invasion through the Ardennes and across the Meuse.

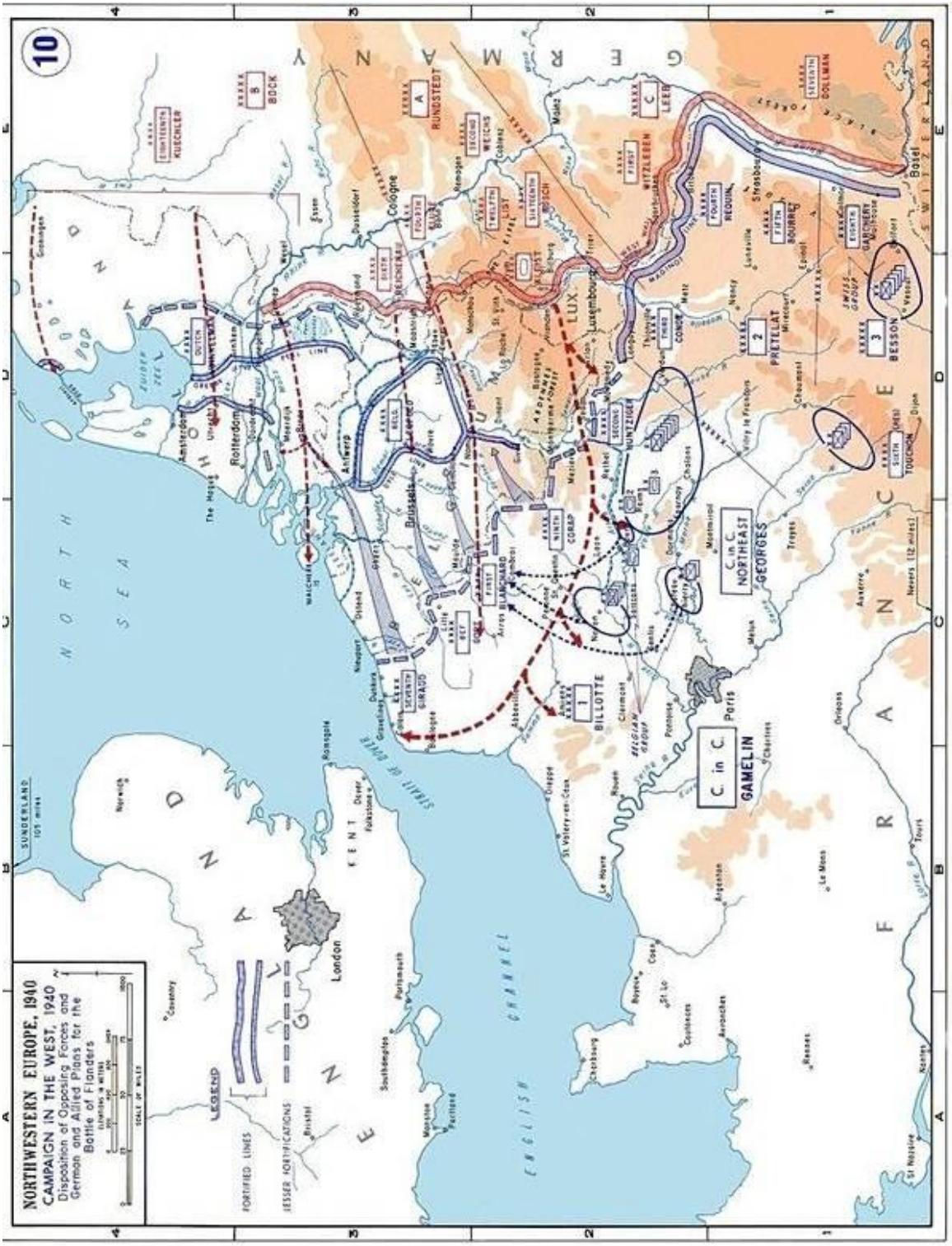

Figure 3.4, Panzer division breach of the Meuse and push to the English Channe

Conclusion

The Panzer divisions deployed in Poland and France restored mobility to operational tactics and made tank warfare the dominant strategy on the modern battlefield. Heinz Guderian's strategy involved grouping tanks together to form a breaching fist through the enemy's defenses, along with having tanks supported by air support and an array of mobile weapons that advanced simultaneously. It gave birth to a new type of military offense capable of overwhelming any army that was on the defense in the first two years of the Second World War of 1939 and 1940. What is left to discuss is the fascinating contradiction of why Germany was defeated in the end in spite of such a brilliant and successful strategy. Interestingly, this very same strategy was such a success and brilliant achievement that it became the eventual cause of the Wehrmacht's downfall. The Allies eventually learned from the mistakes made in Poland and France and adopted the strategy of Panzer divisions to their own use, organizing their own mechanized divisions on the same model but in larger numbers and turned against the Axis to give them a taste of their own medicine.

The Allies, in particular the British, began to apply the German principles of tank strategy as early as years of the war in North Africa. But the British had to learn to apply armored tactics the hard way after they were involved in a series of engagements with the Italians who, although had little armor available, knew the benefits of the German strategy which allowed them to withdraw and regroup faster than the speed of the pursuing British. The British began to use armored warfare tactics only after they had received one defeating blow after another by Erwin Rommel and his famous Afrika Korps which had been sent in to Africa to assist the Italian war

effort in the desert. Rommel used the same panzer tactics in Africa that had made him victorious in France through mobility. But mobility began to decline due to lack of fuel and vehicles that were being transferred to the Russian front.[1]

It is true that in France the Germans won with smaller numbers but superior tactics, but in Africa, when the British used the same strategy in combination with a larger amount of war materiel supplied by the Americans, numbers became the overwhelming factor. German industry was quite limited, especially when put into comparison to industry in the United States and the Soviet Union.[2] During the battle of El Alamein, Bernard Montgomery who was positioned in charge of all British forces in North Africa combined mobile divisions with coordinated air attacks just like the Germans. As the British began their counter attack and the Germans in Africa ran out of vehicles and supplies, Rommel was forced on the defensive which was a first step in the direction: the Panzer divisions were created to be on the offensive so that they could strike a decisive blow at a point of interest that exploited a weakness in the enemy line, disorganizing the enemy and forcing him into defeat. Being on the defensive did not allow Rommel to exploit the full potential of his tank divisions, especially when he had fewer units than the British. Although Rommel was a brilliant tactician and set up a brilliant defense, he lost the war in Africa due to circumstances that were out of his control. Panzer division strategy would have won the war in Africa too, but the British mastered this very same strategy and had

[1] John Mosier, *The Blitzkrieg Myth: How Hitler and the Allies Misread the Strategic realities of World War II* (New York: Harper Collins, 2003), 158-160.
[2] Omer Bartov, *Soldiers, Nazis, and War in the Third Reich* (New York: Oxford University Press, 1991), 13.

the support of larger numbers. The Germans were eventually driven out of Africa and forced to withdraw back to Europe.[3]

The experiences of North Africa saw the beginning of the breakdown of Panzer strategy that had worked so well in Poland and France. Such a breakdown was amplified to greater degree on the Russian front. The Germans were put in a situation where their strategy and mastering of tank warfare began to deteriorate due to many different circumstances related to weather and mechanical problems. Right as the Germans were facing these problems, the Russians, along with having a massive amount of resources and war material, improved their own understanding of tank warfare after the many agonizing months of being driven back into the heart of Russia.

It is assumed that invading Russia has always been an almost impossible task because of the harsh weather and the enormous size. Although the inconveniences of these circumstances played a large part in the Wehrmacht's defeat in the east, the spectrum of troubles depended on a wider range of causes that went against every principle of tank warfare. One of these problems originated from within the German General Staff and was a major setback to a strategy that had been so successful in the past. Heinz Guderian's own experience in the organization of Operation Barbarossa provides an insight to the mistakes of the German High Command. Guderian himself was opposed to the invasion of the Soviet Union for reasons that had previously resulted in the defeat of commanders in the past like Napoleon Bonaparte (where the extent of the endless fields of Russia and the bone shivering cold of the Russian winter caused the French army to withdraw.)

[3] Mosier, *The Blitzkrieg Myth*, 166.

Learning from these mistakes, Guderian was astonished by Hitler's decision to invade such vast and hostile territory. Hitler's reasons for making wrong decisions was partially due to a sense of overconfidence from the previous victories where "he had succeeded in infecting his immediate military entourage with his own baseless optimism."[4] Cold and vast territory were factors that should have been taken seriously, but if these problems were not enough, the strategy chosen by Hitler of dividing his forces into three army groups proved disastrous to the Germans. Panzer divisions were successful in Poland and France because they were grouped together in a tight fist. Operation Barbarossa went against this very principle as the Panzer divisions were separated and divided into their respective army groups. Although the invasion began with a rolling advance into Russian territory, the three army groups that were respectively Army Group North, Army Group Center, and Army Group South, began to slow down because they were weaker and individually did not have enough strength to achieve their goals. Guderian already was pessimistic of Operation Barbarossa, but Hitler's refusal to accept his plan of striking together and grouping the Panzer together in a united front truly annihilated the chances for absolute victory.

The failures of each individual Army group became soon apparent from the very start of the campaign. When looking at Army Group center, the objective to take Moscow was an absolute priority being that the fall of the Soviet capital would have meant a seizure of a political center and a large span of territory rich with industry. F.W. Mellenthin's experiences on the Eastern Front reveal the need for a single "Schwerpunkt" on Moscow was an absolute necessity. Army Group Center should have been the single point of effort where the mass of the Panzer

[4] Guderian, *Panzer Leader*, 151.

divisions needed to create a strong enough force to encircle and capture Moscow.[5] Hitler's overconfidence pushed him to try and capture multiple objectives at once; in fact, right as Army Group Center arrived in the proximity of Moscow, it was ordered to halt and wait for the other two army groups to capture their respective objectives under "Army Directive 34". Being that all the other army groups also had weaker strength after their separation from a main force, the objectives were never taken and the halt ordered by Hitler became permanent.[6]

Hitler's disruptive directive to halt Army Group Center was especially counter intuitive after the Panzer divisions were subject to conditions which forced a loss of mobility. Operation Barbarossa required a large number of troops in order to mount the largest invasion in history. If victory was to be achieved in Russia, mobility through mechanization of modern technology was crucial. Limited German industry, however, was unable to furnish enough vehicles to make all divisions fully mobile, including the infantry which was forced to rely on horses, especially in a territory so vast where mechanization was perhaps the most important necessity. When the war started, the Wehrmacht appeared as the most modern military force in the world at the time as the Panzer divisions had defeated the enemy with lighting speed. The war in Russia, however, strained the German war machine and forced it to begin a slow process of losing modernity. This was a slow reverse process which the Wehrmacht was forced to rely on old technology due to a shortage of modern vehicles that were either not enough to begin with, or were destroyed along the Russian front.[7]

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[5] Mellenthin, *Panzer Battles*,153.
[6] Oberkommando der Wehrmacht, *Blitzkrieg to Defeat: Hitler's War Directives, 1939-1945*, trans. H.R. Trevor-Roper (New York: Rinehart and Winston, 1965), 91.
[7] Bartov, *Soldiers, Nazis, and War in the Third Reich*, 15.

As the whole Wehrmacht increasingly became deprived of modern equipment, the entirety of the front, including the Panzer divisions, began to slow down and eventually forced to halt. Panzer strategy received too many setbacks to become effective and soon the German tanks, along with the increasing numbers of losses, were being used in fewer numbers in a defensive war which needed to be avoided. The Germans were now put in a similar position that the Allies were in earlier in the war. Smaller and smaller elements of the Panzer divisions were used in an increasingly less modernized type of defense which lost so much of its original strength that it had to depend on trenches to hold on to every bit of ground that was being seized by the Russians. The fact that the Germans were put into such a position of defense was unthinkable in Poland and France. Although the element of grouping tanks together remained firm when enough tanks were available, there was no way of stopping the Russians who were now on the offensive and began to use German tactics of encirclement with their own version of motorized divisions.[8]

The desperate German reversal from offensive strategy to defensive operations in the middle of horrible weather conditions with thinned out supply lines began with the disaster of a section of Army Group South at Stalingrad. It would be repetitive to retell the story of the Battle of Stalingrad, for it is known that this was the major setback to German operations in the east. What is important is to analyze how this setback occurred and that it officially began the slow withdraw of the Wehrmacht from Russia. The damaging attack of the Red Army at Stalingrad in 1943 was a decisive blow because the German army was in a state of "demodernization", but most importantly this condition was combined with weather and the Russians ability to master armored warfare.

[8] Ibid, 17.

In the midst of the desperation of war, the Russian military commanders began to reorganize the army. The massive number of resources allowed the USSR to have larger tank and vehicle production than Germany. Technologically, the Russians also drastically improved tank strategy and quality, making their standard and most common T-34/85 battle tank comparable to the German Panzer IV. The difference was that the Russians not only had more of these tanks, they were also more adapt in dealing with the Russian landscape, making cross country move much easier for the Russian tanks. The Russians then began to organize their tanks into divisions that were almost the exact, if not superior, counterparts to the Panzer divisions: it is almost as if the Russians created a counter-Blitzkrieg. The Russians created what were known as "tank corps". The Tank Corps was a concentrated and cooperative unit that could move fast. It was composed of 168 tanks, mobile anti-tank battalions, mobile anti-air battalions and the Katyusha rocket launchers that bared a barrage of missiles onto the invading Germans.[9]

The creation of the tank Corps was the product of the Russian adoption of German tank strategy used in the Panzer divisions. These were widely used by the Red Army and massed to carry out many attacks that eventually put the Germans on the defensive. Through the adoption of those same principles of encirclement and annihilation, the Tank Corps became the new spearhead of the Russian counter offensive which smashed through German defensive positions all the way back to Berlin. The Germans were not, however, always on the defensive, for they were able to mount a series of massive counter attacks. However, the failure of these operations was caused by further abandonment of principles of tank warfare. For example, even during the largest tank battle in history at Kursk, the Panzer divisions maintained a similar composition to

[9] Richard Overy, *Russia's War* (London: Allen Lane, 1998), 190-191.

those earlier in the war, but a failure to maintain strategic principles like the element of surprise and organized command of divisions directly from the battle field forced Germany to gamble away a last attempt to divert the course of the war. In addition to the Russians having larger numbers, the German divisions were ordered to advance into territory of the enemy's choosing, which, combined with the muddy roads, lost the element of surprise, and the Panzer divisions became sitting targets for the firestorm unleashed by the Red Army.[10] The situation became obsolete when tank commanders were not given the choice to make their own decisions from the battlefield to seize moment. This was a consequence of Hitler's directive to take personal command of all armed forces and giving fatal orders to his divisions on a battlefield that he had never seen before. Guderian and Rommel always argued that a commander should command from the front and not from the rear because only he can make the best of a situation and see what must be done as the battle unfolds. The abandonment of the basic strategic principles that allowed for a proper function of a Panzer division steadily grew throughout the war and became one of the main causes behind the ultimate collapse of the Wehrmacht. As Germany's mighty mechanized divisions slowly began a process of decline, the Allies learned much from the Germans and applied the same principles of tank warfare to their own mechanized divisions.

The Germans lost the war in the end, but this should not take away the fact that the strategy developed by Guderian and his supporters was indeed brilliant: the strains of war and mistakes from the German High Command destroyed the ability of this strategy to be carried on. The idea of grouping tanks together to form an independent and self-reliant mobile armored

[10]Mellenthin, *Panzer Battles*, 230.

“fist”, supported by a range of mobile weapons and coordinated air strikes, laid the revolutionary foundations for tank warfare that are still in use today.

Annotated Bibliography

Primary Sources

Drzewieniecki, Walter M. Dr. "The Polish Army on the Eve of World War II," *The Polish Review* 26 (1981): 54-64.

Walter M. Drzewieniecki served in the Polish Army during World War II. He fought in Poland in 1939 when the German invasion began and later went underground. He escaped German occupied Poland in 1940 and joined the Polish army abroad in the United Kingdom. He came to America after the war where he obtained his doctorate from the University of Chicago. He is an expert on eastern European history and his article focuses on the state of the Polish army before the beginning of the Second World War. His writings are helpful because they give a detailed description of the organization and structure of the Polish army that lacked mechanized divisions.

Guderian, Heinz. *Panzer Leader*. Washington: Zenger Publishing Co., 1979.

Heinz Guderian was a famous German military general who commanded the first tank divisions of the Wehrmacht and is regarded as the father of tank warfare. His book is a key source to my research because it shows the personal experiences of this general in the debate and conflict for the development of the German Panzer divisions as a revolutionary new type of warfare during the inter war period. It also shows Guderian's first-hand account of the application and success of Panzer strategy in Poland and France, along with the following decline of Panzer activity in Russia.

Karol K. S. "A Polish Cadet in Action, September-October 1939," in *The Mammoth Book of Eyewitness World War* II, ed. Jon E. Lewis, 35-39. New York: Carroll & Graf Publishers, 2002.

This source was useful to my research because it shows the account of the Invasion of Poland from the side of the Polish defenders. K.S. Karol was a young cadet who served in the Polish army when the Germans attacked. His account of the invasion gives detail to the state of confusion that the Polish army was in, along with the inability of the Polish High Command to react and organize a defense.

Mellenthin, Major General F. *Panzer Battles, A Study of the Emplyoment of Armor in the Second World War*, trans. H. Betzler. Norman and London:University of Oklahoma Press, 1977.

General Mellenthin was an officer of the German General Staff who served as Chief of Staff of the 4th Panzer Army. He took part in some of the most important campaigns across Europe like the invasions of Poland, France and Russia. His experiences of these campaigns are a main focus of his book and are of great importance to this topic because they reveal the advantages of the German tank strategy along with the flaws of the Allied strategy.

Miksche, Ferdinand Otto. *Attack, A Study of Blitzkrieg Tactics*. New York: Random House, 1942.

Otto Miksche was a Czech officer who fought in the Spanish Civil War against the fascists and their Italian and German allies. He later left for England where he continued to write about the development of modern strategy in the opposing armies. The content of his writings focuses on the development of modern mechanized warfare as early as in the midst of the civil war in Spain. His writings are of great use because they show one of the few Allied views that favored the development of mechanized divisions right as the new and successful tactical strategy of the Panzer divisions unfolded in Europe.

Oberkommando der Wehrmacht. "Directive 34," *Blitzkrieg to Defeat: Hitler's War Directives, 1939-1945*, trans. H.R. Trevor-Roper, 88-88. New York: Rinehart and Winston, 1965.

This military document was issued to Army Group Center by the German High Command. The content was an order to halt the German advance on Moscow. It is important because it is an example that shows the inefficient type of strategy used by Hitler at a crucial point of the war that failed to properly make use of Panzer division strategy.

Rommel, Erwin. "Operation Yellow: Crossing the Meuse, France, 13 May 1940," *The Mammoth Book of Eyewitness World War II*, ed. Jon. E. Lewis, 55-57. New York: Carroll and Graf Publishers, 2002.

Erwin Rommel was a famous German general whose reputation as a German tank commander and mastering of tank warfare is well known. His diary describes the situation at the front during the break through into France in May 1940. His experiences are important because they show the personal experience of the passage across the Ardennes and Meuse, followed by the rapidity of the advance to the English Channel.

Strzetelski, Stanislaw. *Where the Storm Broke: Poland from Yesterday to Tomorrow*. New York: Roy Slavonic Publications, 1942.

This book represents the Polish reaction to the rapid invasion of Poland by the Wehrmacht in 1939. It is useful to my research because it gives the view of the Polish defenders as they try to identify the causes to the success of the German attack: superior strategy was something that the Germans had mastered and that the Polish were seriously lacking.

United States Military Academy, Department of Military Art and Engineering. *The Campaign in Poland 1939*. West Point: New York, 1945.

This source explains the causes of the defeat of the Polish army seen from an Allied prospective during the war. This document compares Polish industrial capacity to that of Germany. This document is important to my research because it describes industry as one of the reasons behind Poland's weak military arsenal.

US War Department, *Handbook on the German Military Forces*. Baton Rouge: Louisiana State University Press, 1990.

This source was useful to my research because it gives a contemporary assessment of the U.S. War Department's understanding of the German army. Every aspect of the German army from the beginning to the end of the war is described with much detail. It gives detailed information on the structure and strategy of the German Panzer divisions during an offensive.

Secondary Sources

Addington, Larry H. *The Blitzkrieg Era and the German General Staff, 1865-1941* .New Brunswick, N.J.: Rutgers University Press, 1971.

Addington is a military historian who has focused on a range of strategy from different periods in history. His book discusses the many aspects of the German General Staff and their involvement in the development of German strategy and military. His work is of use to my research because it describes how German commanders were coherent to traditional German strategy of Kesselschlacht (the war of encirclement and annihilation). It was helpful because it focuses on the debate between high ranking German officials in the General Staff and Guderian, whose resistance through support of few influential generals allowed him to fight for the strategy of tank divisions.

Bartov, Omer. *Soldiers, Nazis, and War in the Third Reich.* New York: Oxford University Press, 1991.

Omar Bartov is Visiting Raoul Wallenberg Professor at Rutgers University and has written other books on the subject of the Second World War in the east such as *The Eastern Front, 1941-1945*. This book focuses on the barbarization of the German army against the populations of the occupied areas as a consequence of deteriorating conditions on the front. It was helpful because it describes how the German army began to lose the modernity in the army which was present earlier on in the war.

Belvin, Alexander. *Inside the Nazi War Machine: How Three Generals Unleashed Hitler's Blitzkrieg upon the World*. New York: New American Library, 2010.

This source was of great importance because it compares and contrasts the strategy of the Germans to that of the western Allies. There is a precise and informative distinction between static warfare and war of maneuver. The description of such strategies was helpful because it compares and explains why a static strategy of the Allies was defeated by one of maneuverability used by the German Panzer divisions.

Bethell, Nicholas William. *The War Hitler Won: the Fall of Poland, September 1939.* New York: Rinehart and Winston, 1973.

Nicholas Bethell is a young British historian and journalist whose focus is on Russian and Polish affairs. His work gives a detailed analysis on all the military, diplomatic, and moral aspects of the German invasion of Poland. This information was of use to my topic because it gives a detailed description of the Polish plans for the defense of Poland.

Chelminski, Rudolph. "The Maginot Line." *Smithsonian* 28 (1997): 90.

This article gives an overall description of the Maginot Line from its proposal to the French government to the actual construction of this huge line of fortifications. The Maginot line was built as a defensive barrier against Germany, but the description of its flaws were key to my research because they show the weakness and backwardness of the French defensive system when compared to the offensive strategy of the Panzer divisions.

Citino, Robert Michael. *Quest for Decisive Victory: from Stalemate to Blitzkrieg in Europe, 1899-1940* .Lawrence: University Press of Kansas, 2002.

Another book from Robert Citino, it focuses on the development of the German strategy from the time before World War I to the invasions of France in 1940. This work is relevant to my topic because it describes the failures behind the German strategy in the First World War that were later redeveloped during the inter war period.

Citino, Robert Michael. *The Path to Blitzkrieg: Doctrine and Training in the German Army, 1920-1939.* Boulder: Lynne Rienner Publishers, 1999.

Robert M. Citino is a professor at Eastern Michigan University where he teaches European history. He has written much about armored warfare and one of his other books such as *Quest for Decisive Victory: from Stalemate to Blitzkrieg in Europe, 1899-1940* has also been essential to my topic. This book focuses on the development of the German Army during the inter war years. The information obtained was of use to my topic because it describes the role of Hans von Seeckt in modernizing the German army.

Frieser, Karl-Heinz. *The Blitzkrieg Legend: The 1940 Campaign in the West*. Annapolis: Naval Institute Press, 2005.

Serving as a colonel in the German Bundeswehr, Karl-Heinz Frieser has had experience as a commander of an armored infantry company. He is also the head of the Department of World Wars I and II at the Military History research Institute of the Bundeswehr in Potsdam. His book focuses on the invasion of France by the Wehrmacht in 1940 and is helpful to my research because it explains one of the reasons for German victory as a blend of classical military principles with modern technology.

Jackman, Steven D. "Shoulder to Shoulder: Close Control and Old Prussian Drill in German Offensive Infantry tactics, 1871-1914." *The Journal of Military History* 68 (2004): 73-104.

Steven Jackman has been a visiting professor at Creighton University. He received his Ph.D. from Nebraska-Lincoln University and has begun work on conservative influences on German army tactics. This article focuses on the adaption of modern technology into traditional Prussian drill and army tactics. The information from Jackman's work has helped my argument by supporting that the integration of modern technology with old strategy is influential in determining victory.

Jörgensen, Christer. *Rommel's Panzers: Rommel and the Panzer Forces of the Blritzkrieg 1940-1942.* St. Paul: MBI, 2003.

Christer, Jörgensen is a Swedish author of many articles regarding military history. His book concentrates on Erwin Rommel as a brilliant military tactician during the Second World War through his experiences in the campaigns in Poland, France, and North Africa. This information was helpful because it describes the speed of the advance of Rommel's divisions through France on their way to the English Channel.

Macksey, Kenneth. *Guderian: Panzer General* .London: MacDonald and Jane's, 1975.

Macksey has served in the Royal Armored Corps since 1941 during World War II. After the war his experiences served him well in his writings about the World Wars and strategy in warfare. His book focuses on Heinz Guderian and his experiences in the military as a commander, strategist and developer of tank warfare. This book was useful because it gives a second opinion on Guderian's experience during his carrier and helps determine the accuracy of Guderian's autobiography.

May, Ernest R. *Strange Victory: Hitler's Conquest of France*. New York: Hill and Wang, 2000.

This book of Ernest R. May focuses on the German campaign in France and, most importantly, gives reasons for the unexpected defeat of the French army. May is also Charles Warren Professor of American History and Harvard University. His book has been essential to my topic because it points out the advantages of the German strategy at the advance across the Meuse and the failures of the French strategy to organize and create a counter attack after the German breach of the French inefficient defensive lined.

Mitcham, Samuel W. *The Panzer Legions: A Guide to the German Army Tank Divisions of World War II and Their Commanders.* Westport: Greenwood Press, 2001.

This book gives very precise information on every Panzer division used during World War II by the German Wehrmacht. Every division has a detailed description of how it was formed, what it was formed by at what point during the war, and areas of deployment throughout the war. It was useful to my research because it gives precise information on Guderian's own 2nd Panzer division in Poland.

Mitchman Jr., Samuel W. *The Rise of the Wehrmacht: Volume 1*. Westport Connecticut: Praeger Security International, 2008.

Samuel Mitchman in an expert on Nazi Germany and the Second World War and has written a number of books on these topics. His book, in two volumes, focuses in detail on the Entire German armed forces (the Wehrmacht) and is describes in detail every instance of their deployment throughout the war. His first volume was important because it describes the first uses of the Panzer divisions on the foreign soils of Czechoslovakia and Austria.

Moorehead, Major Richard D. "Technology and the American Civil War." *Military Review* (2004): 61.

This article focuses on the use of the telegraph and the railroad as a couple of new technologies that were used in the Federal army during the America Civil War. The railroad and telegraph improved communications and movement of the Union army, giving it an edge over the

Confederates. This source was relevant as it confirms an older example that the integration of new technology with traditional military strategies can lead to victory.

Mosier, John. *The Blitzkrieg Myth: How Hitler and the Allies Misread the Strategic realities of World War II.* New York: Harper Collins, 2003.

John Mosier is a professor of English at Loyola University in New Orleans and his studies of the two World Wars have helped him develop as a military historian. The book he has written makes the case of the importance of breakthrough and how it was used by different commanders on both sides once this theory developed by Guderian was accepted. This source was relevant because it explains the adaption of armored warfare by the British in North Africa and how it was turned against the Germans.

Overy, Richard. *Russia's War*. London: Allen Lane, 1998.

Richard Overy focuses on the history of World War II and history of Germany since 1900. His book focuses on the German campaign in Russia from the launching of operation Barbarossa to the final days of the war in Berlin. His work was useful to my research because it examines the Russian response to German tank strategy by creating a Russian version of the tank divisions.

Powaski,Ronald E. *Lightning War: Blitzkrieg in the West, 1940.* Hoboken N.J.: J. Wiley & Sons, 2003.

Ronald E. Powaski is professor of History at Cleveland State University and has written many books focusing on the military of nations. This book describes the German invasion of France from the organization of the invasion, to the crossing of the Ardennes, the Meuse, and advance to the English Channel. This was a relevant source to my topic because it shows the development, argument, and creation of Case Yellow (the plan for the invasion of France).

Rossino, Alexander B. *Hitler Strikes Poland: Blitzkrieg, Ideology and Atrocity.* Lawrence: University Press of Kansas, 1966.

Rossino's book describes the Nazi occupation of Poland and focuses on the brutal behavior of some of the German divisions from the very beginning of the war in the effort of carrying out Hitler's plan of "Lebensraum" or "living space". This source was useful because shows how little military resistance was left after the German divisions cut into Polish territory.

Schneider, Wolfgang. *German Small-Unit Armor Tactics in World War II.* Mechanicsburg, PA: Stackpole Books, 2005.

Schneider's book describes in detail the aspect, technical structure, and strategy of the German Panzer divisions during the Second World War; he argues that many of the strategies used are still in use in modern tank tactics today. This source was useful because it explains how the German tanks were prepared to engage fortified positions across the Meuse river.

Von Clausewitz, Karl. *On* War. New York: The Modern Library, 1945.

Clausewitz is a well-known and respected Prussian military theorist and strategist. His book "On War" embodies all the basic principles of warfare from the basic definition of war to the

appliance of principles of war on the battlefield. His book helped define the old strategies of the German military as well as the old German tactic of encirclement and annihilation (Kesselschlacht) that Guderian wanted to revive with Panzer divisions.

Zaloga, Steven J. *Panzer IV vs Char B1 BIS*. Oxford: Osprey Publishing, 2011.

Steven Zaloga has served with the Institute of Defense Analyst and has written many books on military strategy and military technology. His book compares the heaviest tanks in the German and French armies. It was helpful because it shows the structure, advantages and disadvantages of the two tanks as well as how compatible they are with tank division strategy.

Zaloga, Steve J. *Poland 1939: The Birth of Blitzkrieg* .Westpoint: Praeger, 2004.

The book describes the commanders, structure, and strategy of the German and Polish armies that fought each other in 1939. The information was useful because it helps compare the two opposing armies and determine which factors influenced the successful advance of the Panzer divisions in advance through Poland.

Zuber, Terence. "The Schlieffen Plan Reconsidered." *War in History* 6 (1999): 262-305.

This article analyzes the strategy of the Schlieffen plan before the beginning of World War I that was developed to defeat the French army in case of a conflict. The Schlieffen plan was finally put into use as soon as the war began in 1914 but came to a stand-still when mobility of the German army was lost and the advance came to a halt. This article was of use because it helped explain the reasons for the decline of the German advance due to a flawed strategy that explains the appearance of a stalemate through trench warfare.

Illustrations

Figure 1.1. British Mark IV Tank. Available from: Wikepedia, http://commons.wikimedia.org/wiki/File:British_Mark_IV_Tadpole_tank.jpg (accessed June 2. 2008).

Figure 1.2. Heinz Guderian inspecting a Panzer Division. Available from: Achtung Panzer, http://www.achtungpanzer.com/gen2.htm.

Figure 1.3. Panzer Is in formation before an exercise. Available from: Achtung Panzer, http://www.achtungpanzer.com/german-panzer-divisions-1935-1939.htm.

Figure 1.4. Hans von Seeckt to the left. Available from: Wikipedia, http://commons.wikimedia.org/wiki/File:Bundesarchiv_Bild_102-, 10883,_Hans_von_Seeckt_und_Otto_Ge%C3%9Fler_retouched.jpg.

Figure 1.5. A poster of Heinz Guderian as father of the Panzer Divisions. Available from: Comic Vine, http://www.comicvine.com/heinz-guderian/29-15884/all-images/108-237102/guder3/105-1487173/