

How the Wermacht Transformed the Operational Art of War

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During the Second World War's first three years Germany regularly defeated the most powerful military establishments on the planet; victories placing Germany in position to dominate Europe. How Germany achieved these stupendous military feats is often ascribed to a variety of reasons. Since the War ended perhaps the top reason cited for German success is that during the 1930s the German army had developed a brand new method for waging war – *Blitzkrieg* – or lightning war.

Nevertheless, the argument Germany invented a new method of war in the span of a few short years is also patently false. What Germany did accomplish in the years prior to the Second World War was to develop, test and field one crucially important innovation; an innovation rising above all others in terms of transforming the battlefields upon which the world's largest armies would clash during the Second World War. This innovation was premised on coupling the promise inherent in the internal combustion engine as a technology capable of greatly changing how wars were fought with the logical outgrowth from centuries of first a Prussian and then a German method for waging war. What Germany developed, in short, was a radical new organization of men and machines; a new organization named the panzer division.

The panzer division represented a new method of grouping the most important combat arms within a single organization capable of flexibly fighting at either the tactical or operational level. Consequently, the panzer division enabled the German army to quite literally run circles around its opponents. The following article will first explain why the German army of the 1930s was better positioned than perhaps any other military establishment in the world to integrate the

internal combustion engine into existing doctrine and tradition. Second, this article will briefly explain what made the panzer division such an effective organization and why it offered the German army with a tremendous opportunity to achieve unprecedented success during World War II.

A FRAMEWORK FOR CREATING THE PANZER DIVISION: STRATEGY, TRADITION, DOCTRINE, TRAINING, AND ORGANIZATION IN THE GERMAN ARMY

The German army that rolled across Poland's borders on September 1st, 1939 had developed from a long developmental history, predating by centuries the National Socialist regime and the Weimer Republic. There is no question the opportunity for German military planners to create a dominant military machine within the brief time following Hitler's ascension to power had arisen primarily because of decisions made by interwar era German military reformers.

However, it was what German military reformers sought to accomplish which proved crucial. What they sought was simple; to re-establish a German military tradition they believed had been marginalized during the First World War yet offered the best chance for the German state to break free from its historical geo-strategic constraints. The choices made by Germany's military leadership following the end of the First World War thus built upon important and long-standing historical precedent within a German army primarily modeled upon its Prussian antecedent. Thus, it is to that Prussian and Imperial German predecessor where we will begin our analysis into the role played by the German army in transforming the operational art of war during World War II.

One theory had long formed the intellectual base for Prussian military leaders and then the Prussian/German General Staff's strategic and operational goals as it grappled with the problems presented by warfare against multiple nation states. It was a simple theory; seek victory over one enemy at a time via an annihilating first strike. This theory had stemmed from the battlefield exploits and peacetime efforts of 17th, 18th, and 19th century Prussian leaders, including most prominently Frederick William (The Great Elector), Frederick the Great; as well as the efforts of Prussian military leaders and thinkers - including Karl Maria von Clausewitz, August Neidhardt von Gneisenau, Helmuth von Moltke the Elder, and Imperial Germany's long serving Chief of the General Staff at the turn of the 20th century; Alfred Graf von Schlieffen.²

All these men shared the same problem their successors would in the twentieth century; solving the vulnerabilities presented by Germany's central position in Europe, poor domestic resource base and enemies positioned on virtually every German border. Each of these men made important contributions to the evolution of a uniquely Prussian/German method for waging war. The first contributions nevertheless had come from early in Prussia's history - as the Prussian army had repeatedly sought to use mobility to fight short decisive wars.

During the eighteenth century Frederick the Great followed a nascent Prussian military tradition begun in the seventeenth century by The Great Elector; Frederick strung together a series of victories, including at Rossbach and Leuthen where he relied on his army's mobility to sweep much larger armies from the field of battle. Military historian Robert Citino has gone so far as to state Frederick's victory at Rossbach was more than just a moment further cementing the primacy of maneuver as a central tenant in Prussian military thought and practice but to also state Frederick "discovered the art of operational-level warfare" at Rossbach.³

In addition, at Leuthen, Frederick's armies also displayed two more characteristics later playing a critical role in the Wehrmacht's future successes. First, Frederick's great victories came from a system relying on the independence of the local commander to make his own decisions in regards to solving the problem of how best to defeat his foe on the battlefield – a theory articulated by later military observers as part of a German system of command for better or worse known as *Auftragstaktik*. Second, from early in Prussia's history the Prussian army recognized the value of combined arms in defeating its foes; with the Prussian artillery, infantry and cavalry frequently working synergistically to defeat the foremost European military powers of the day.⁴ In the decades that followed Frederick's victories the Prussian army would continue to develop its approach to warfare – mostly on the battlefield but also in writing – repeatedly stressing the importance of mobility, maneuver, combined-arms, and the independence of the local commander on the operational and tactical level.

During the seventeenth, eighteenth and nineteenth century Prussian strategic thought turned toward using maneuver to not only defeat an opponent but also pursue a battle of annihilation; a concept of fighting that later merged with total war theory, and became a tradition focused on defeating an enemy army in a war of movement defined as *bewegungskrieg*.⁵ The goal of fighting a quick war of maneuver to crush one enemy and then wheel the army about to face another would dominate the strategic decisions made by first, Prussia, and then Germany's military and political leaders during the eighteenth and nineteenth century.⁶

Nonetheless, early in the twentieth century and during the First World War Germany would fight two wars; one of movement on Germany's eastern front and one that became a stagnant bloody attritional mess on Germany's western front. Not coincidentally, Germany would

find success in Eastern Europe but would not be able to overcome the bloodletting in Western Europe and therefore lost the war.

Following the First World War, Germany once again faced potential enemies on or near almost every German border. Therefore, German reformers, men such as Hans von Seeckt, just as did their predecessors, knew Germany needed a strategy to balance the odds and turn Germany's weakness into strength. German reformers turned back the clock and sought to create an army which would emphasize speed in movement, the combination of arms on the battlefield and which sought to train commanders to creatively and flexibly carry out general orders at the operational and tactical level in the means they best saw fit. All strategies they believed offered the best option for balancing German numerical inferiority against brute force enemy strength.⁷

The German army thus sought to turn in its purpose once again to the combined arms war of annihilation pursued through maneuver. This was both a return to German military tradition and the outcome of a German solution to breaking the stalemate in Western Europe during World War I. In the waning months of the First World War, German *stoss*, or assault, battalions helped the Germans break through Allied trenches and restore a measure of movement to the Western Front. By concentrating firepower in mobile weapons such as submachine guns, grenades, flamethrowers and light artillery pieces - employed in the direct fire role - German *Stoss* soldiers, or *stormtroopers*, took advantage of the weaknesses exposed by defensive doctrines that seemingly had solved the battlefield's lethality.⁸ The *stormtroopers* regularly avoided allied strongpoint's and infiltrated deep into allied positions to attack crucial command and control centers, supply depots, and artillery positions; restoring tactical mobility to the battlefield.⁹

Germany's late First World War effort at breaking the stalemate, however, proved too late. The Western Allies also had developed a mobile solution to trench warfare, but through a new technology employed en masse as a shock weapon; the tank.

In the 1920s era German army Von Seeckt hammered home the traditional German emphasis on preserving mobility and locating weak points in the enemy defenses, usually the flank. By the mid- nineteenth century, more often than not, Prussian/German assault armies also did more than seek to flank their enemies; they frequently deployed and fought concentrically, initially divided, but simultaneously arriving at the critical point on the battlefield to produce a tremendous shock effect that often resulted in enemy forces being encircle and cut to pieces.¹⁰ Hans Von Seeckt, the leading reformer within the German army of the 1920s, therefore emphasized what his training and centuries of German military tradition had prepared him to do, fight the war of maneuver, *Bewegungskrieg*; since made infamous with the more commonly known misnomer *Blitzkrieg*.¹¹ A key to Seeckt's conception of the war of maneuver was his belief, like many of his predecessors, in the value of combined arms organized into ad hoc units put together by German officers who "often broke up existing units for reassignment into combined arms teams integrating and taking weapons from throughout the larger division and using them in much smaller groups called *Kampfgruppen* (battle groups).¹²

The *Kampfgruppen* thus extended the stormtrooper (*Stosstrupp*) infiltration tactics dating from the First World War in the short term,¹³ and in the long term extended from an even older developmental lineage stretching all the way back to Frederick the Great's victories. This developmental lineage did not stop with the organization of the army's infantry backbone either.

The period from the late nineteenth century through the First World War had featured an extended revolution in technologies applied to warfare.¹⁴ In the initial mid 19th century innovative wave, railroads and the telegraph forever changed logistics, communications, and mobilization. In a second late 19th century innovative wave machine guns, poison gas, and vastly improved artillery pieces radically changed the battlefield. During a third technological wave, this time early in the 20th century, the internal combustion engine emerged as a crucial weapons system. The Germany army's response to the internal combustion engine was a product of long standing German tradition, doctrines, training, and organization. All of these elements would allow the German army to reap considerable rewards from technologies available to all its potential military rivals, but inadequately realized by these same nations – to their great detriment at that.

THE INTERNAL COMBUSTION ENGINE INTEGRATED INTO GERMAN MILITARY TRADITION, DOCTRINE, TRAINING, AND ORGANIZATION

In an environment characterized by learning and experimentation German officers in the 1920s and 1930s embraced World War One's most important new land based weapons platform, the armored fighting vehicle powered by the internal combustion engine. In marrying new technology to established practice creative German officers moved to the forefront, surpassing the world's other chief early embracer of mechanized warfare; the Soviet Union's Red Army - wracked as it was by internal dislocation late in the 1930s.

What German military theorists did in the 1920s and 1930s was very much a product of a collective tradition almost bred into them.¹⁵ Although in hindsight following the path to success chosen by the German army seems obvious, many of the world's prominent military

establishments failed to repeat the German experience (for reasons too numerous to list in this article).¹⁶

In the interwar period debate raged amongst much of the industrialized world's armies. Among the world's armies this debate often regarded the best manner for integrating the tank into established doctrine. The debate normally pitted powerful and entrenched interests such as the infantry, cavalry and artillery in the army; against advocates for the new weapons systems. Entrenched interests frequently sought to incorporate the new weapons into the existing military structure and otherwise stifled innovation that threatened the status quo. In spite of the power held by entrenched interests in military bureaucracies the world over, a minority of tacticians and strategists emerged, often with no real connections amongst each other, and experimented with among other weapons systems – the tank.

The tank had emerged during World War One as an Allied answer to the stalemate brought by trench warfare on the Western Front.¹⁷ Germany did develop tanks, but for all its technical acumen only did so in a limited fashion.¹⁸ Unfortunately, for the tank, and its enthusiasts, the war ended abruptly on November 11, 1918.

Peace meant armored experimentation stagnated in many countries.¹⁹ Innovation did continue, albeit on a less urgent scale, and military strategists and tacticians debated the new weapon's role in combat. Two schools of thought emerged to lead the debate.²⁰ One regarded the tank as an adjunct to the infantry and artillery – the combat arms that had formed the backbone for most armies in the First World War. Adherents to this conceptual framework for armored operations argued for scattering tanks about the battlefield in a supporting role to the infantry.²¹

A second approach for employing tanks emphasized armored vehicles as the army's primary offensive weapon system. Individuals embracing the tank in such a wholehearted manner organized tanks and other armored vehicles into cohesive combined arms units, rather than operating alone, and thus arguably capable of achieving untold battlefield success. Individual and isolated thinkers throughout the industrialized world enthusiastically backed this idea for employing tanks in mass.

These men included Germany's Heinz Guderian and Ernst Volckheim²², Russia's Mikhail Tukachevsky, Adna Chafee from the United States, Charles de Gaulle, LeQ. Martel, and Colonel Estienne in France and finally, J.F.C. Fuller, and Colonel Swinton in Britain. Nevertheless, although armored advocates were scattered across the globe Germany's unique military tradition (emphasizing combined arms, mobile warfare, aggressive leadership, flexibility and initiative in the officer corps, and past experimentation in solving the problem of oftentimes fighting numerically outnumbered) held tremendous importance in deciding the tank's place in the German army.

Technical tradition thus formed the intellectual backbone for German tactics emphasizing movement and mobility. Therefore, when Germany began experimenting with tanks, domestic armored theorists – men such as Ernst Volckheim and Guderian – turned to Frederick William I, Frederick the Great, Moltke, and Schiefflen's experiences and writings – and noticed the tank readily fit into the ways of the past.²³ German military tradition thus played perhaps the critical role in helping to create the panzer division – the world's first effective combined arms operational level grouping of men and machines. For better or worse, this organizational model remains the pre-eminent form of ground based striking power to this day and more than anything

else, in an organizational sense, contributed to Germany's great victories during the Second World War.

Consequently, it was Germany's decision to go beyond the panzer, or tank, and form the combined arms panzer division that provided the German army with an enormous early advantage over its foes in the Second World War. Moreover, although other 1930s era army's began creating *armored* divisions, these were exactly as their name implied – heavy on armor - few armies produced divisional sized combat formations with the all arms balance and flexibility maintained by the German panzer division.²⁴ Furthermore, 1930s Germany stood nearly alone in developing multiple combined arms panzer divisions capable of operating *en masse* or being flexibly broken up to meet any mission.²⁵

The same world wide debates regarding how to best use the tank also occurred in the German army. In the German army however officers with new ideas enjoyed more influence than their international peers. There were a number of reasons for this. Among them was because of the traditional German emphasis on creativity and initiative demonstrated by lower ranking officers or even NCO's. Another reason, in part, also stemmed from Hitler's influence. Hitler's interest in anything new, his propensity for creative thinking, his willingness to take risks, and his strong motivation to upend the status quo helped Germany's panzer advocates take power from the army's established combat arms. Frequently isolated and often-junior officers in Britain, France, and America lacked not only a traditional means of expressing their ideas in the much more highly hierarchical military establishments they occupied but also lacked the influence and political access their peers in Germany enjoyed under Hitler.²⁶

Other than Germany, only the Soviet Union regularly experimented with massed armor on a level greater than the divisional. The Red Army made a substantial commitment toward developing advanced doctrines involving tank use in fluid battles of maneuver. Stalin's thirst for political power nonetheless short-circuited this effort though, when he purged perceived threats to his power by killing or imprisoning many of the Red Army's best minds.

Hitler, on the other hand, allowed his generals to set up three armored divisions in the mid 1930s and as other countries debated, the German army trained. In June 1934 the German army established the *Kommando der Panzertruppen*, led by General Major Lutz, with Guderian as his Chief of Staff.²⁷ This paved the way in November 1933 for the formation of Germany's first armored units and thus Germany's first panzer division began training in July 1935.²⁸

By the end of 1935 Germany fielded three panzer divisions, appropriately designated the 1st, 2nd, and 3rd Panzer divisions, equipped with nearly 500 tanks apiece, albeit almost exclusively with light Panzer I's.²⁹ The army initially organized each division's armored complement into four tank battalions in 2 regiments. Each regiment comprised 128 tanks for 561 tanks per division, including command tanks. In spite of its initially heavy panzer complement the panzer divisions served as true combined arms units with all arms fully mobilized. Panzer divisions later included half-tracks for the infantry regiment, self-propelled artillery, armored cars, self-propelled anti-tank and anti-air elements. The panzer division was to operate entirely on its own with full combat capabilities from reconnaissance to engineering, etc... all preferably mechanized or motorized.³⁰

Ironically, in spite of Germany's leadership in forming the panzer division as a viable fighting unit German panzer divisions would lack a single standard organization for much of the War. Mostly this situation arose because of the uniquely German emphasis on the flexible

combined arms battle group tailored to specific situations as the overriding principle under which the panzer division was created. This principle often provided significant advantages to the Germans over the often-unwieldy formations constructed by their opponents and put into field against what battlefield experiences would prove was a much more flexible German model.³¹

Because of relentless experimentation, theorizing, and training, the German army enjoyed a tremendous advantage over her prospective rivals. Throughout the 1920s German armored theorists, especially Ernst Volckheim – an instructor with the Reichswehr’s Ministry Inspectorate for Motorized Troops, wrote prolifically about the tank as an offensive weapons system, how to tactically employ the tank, defend against the tank, and organize a tank arm.³² In the 1930s Volckheim continued his work at the German tank school at Kazan in the Soviet Union, in 1932-33, and in writing tactical manuals for Germany’s nascent panzer arm from 1937-1939.³³ Through grouping armor with supporting combat arms and applying all *en masse*, the long-standing German effort to concentrate strength at the critical point on the battlefield for a decisive result attained a new level of proficiency.

Armor represented only a small part of the attacking combat arms in even a German offensive; the *panzertruppen* comprised only about 10% of the German army. Nevertheless, the striking power carried by the panzer divisions far outweighed their small numbers. German campaigns also embraced combined arms on multiple levels – not just in conjunction with panzer divisions.³⁴

Terrain, and the enemy defensive layout, dictated the manner for conducting assaults. German combat officers, trained to innovate on the battlefield, often displayed great creativity at the tactical level; the Germans were quick to use weapons systems outside of their traditional roles. For example, both anti-tank and anti-aircraft artillery frequently operated in the direct fire

role to blow open enemy strong points or destroy blocking armor. Because such weapons systems were integral to the panzer division it could as a result flexibly handle nearly any potential problem which arose on the battlefield.

In addition to the traditional combat arms and weapons systems engineers also held a special place in German combined arms doctrine. Well trained engineers were crucial to not only removing obstacles potentially slowing the rapid tempo the panzer divisions needed to achieve but also serving as additional infantry within the panzer division and supporting the efforts of the panzer battalions. Once efforts by the different arms working together had forged a gap in the enemy lines, the divisional panzer battalions, literally poured through the holes in the enemy lines. German close air support, most famously delivered by the infamous *Stuka*, from the German *Sturzkampfflugzeug* or “dive battle aircraft,” produced by Junkers provided direct fire support to the armored spearheads. In addition, patrolling close air support aircraft helped guarantee flank security for the German panzer columns. This was unique to German doctrine, leading British armored theorists, such as Fuller and Liddell-Hart, mostly ignored the role of close air support in assisting armored divisions.³⁵

The German combined arms panzer division, more than any other arrangement of weapons and men, symbolized the Wehrmacht’s power as an ardent practitioner of combined arms warfare; each panzer division contained motorized and infantry units following the armor, protecting the flanks of the penetrating panzer battalions, seizing the land overrun by the panzers and widening the gap in the enemy lines so artillery and other support formations could pace the fast moving panzer spearheads. The panzer battalions themselves, despite being the most powerful units on the battlefield, still needed the support provided by other combat arms in order

to avoid enemy resistance centers, break into the enemy's operational rear to cut supply lines and isolate enemy defensive positions; ultimately rendering enemy resistance ineffectual.

Overall, the tactical and then operational goal for most German assaults was not to blast through the enemy soldiers and annihilate them across the front. Rather German military planners emphasized mobility and speed as tools to breakthrough and cut off the enemy; creating the *Kesselschlacht* – or battle that results in a *Kessel*, literally translated as cauldron, which in German military parlance meant a “pocket” of encircled panicked enemy soldiers³⁶ - more susceptible to surrender to the infantry mopping up behind the fast moving armor.

The acknowledged fluidity on the new battlefield, requirement for quick independent action and decision-making, consequently highlighted the largely unacknowledged technical reason for German panzer success.³⁷ The irony, other than the marginal numbers of panzers, underlying Germany's tank use early in the war was that German panzers held few advantages in armored protection or armament over rival tanks; unlike late in the war when German tank quality ranked superior, in terms of armored protection and armament, to most potential adversaries on the battlefield.

German combined arms armored doctrine produced many important technical advantages beyond brute force measures of strength and greatly facilitating German battlefield success. For instance, effective command and control was crucial to effectively deploy and direct the large all-arms panzer divisions. The Germans, under the training of technical experts such as Heinz Guderian, General Fellgiebel (a signals officer), and Inspector of Motor Transport Troops Col. Oswald Lutz (Guderian's commander) on the other hand had insisted on equipping each and every German panzer with a two-way radio.³⁸ Guderian and Lutz recognized the importance in

combining technical developments, such as tanks and signals, with past German military teachings and experiences. Although Guderian was a smooth political operator, and shrewd self-promoter, he did play a seminal role in building the German panzer arm. Perhaps most importantly it was Guderian's experiences in signals which provided him with the technical training allowing him to appreciate military applications for new technologies.³⁹

Processing information in a timely fashion remains a vital attribute for any successful army. The German army understood this earlier than rival armies and thus found great success early in the Second World War. Integrating technical developments with thorough training enhanced superior command and control made possible through radios and motorized reconnaissance elements and thus allowed panzer leaders to react on the fly and instantly communicate their ideas to other panzers under their command.⁴⁰ Therefore the radio had exponentially increased the German operational tempo and played a critical role in allowing the German army to overwhelm more numerous enemies.

As military technology, including that of tanks, motor vehicles, aircraft and radios, developed during the 1920s and 1930s, it was grafted into the existing German doctrinal framework. The assistant U.S. Military Attaché in Berlin, during a significant part of the 1930s, commented on the German emphasis on mobility and credited German army successes as a product of "a balanced field army, with balanced organization and balanced equipment, executing a plan under almost perfect leadership."⁴¹

German officers traveling to America during the 1930s, such as Captain Bechtolsheim of the German General Staff, described the importance of rapid movement for the German army in a 1932 lecture at the U.S. Artillery School, stating "Our supreme tactical principle is therefore

mobility. Mobility exists down to the organization of the infantry squad. The division, not the Corps is the strategic unit.”⁴² The panzer division represented the essence of such an organizational approach and represented the end product of the traditional Prussian/German 17th-20th century emphasis on movement, flank attacks, concentric encirclements, combined arms, and decisive encirclement battles achieved by bringing together all available firepower at the critical point on the battlefield (known as the *Schwerpunkt*) to overwhelm an enemy in a well choreographed maneuver.

Although by 1939 Europe’s great powers had spent centuries watching the Prussian and German army gradually unveil its brand of warfare, the internal combustion engine brought a level of speed and intensity to even the frenetic German war making pace that opposing armies scarcely would have time to appreciate before repeatedly finding themselves on the losing side of many a battle in the opening years of the Second World War. Germany’s enemies were simply unprepared for what the panzer division could accomplish and thus would pay an extraordinarily steep price; a price that included nearly costing them a War which by all quantitative brute force measures the allies should have won handedly. Win the allies did, but only after the panzer divisions had wreaked havoc in their ranks and transformed the approach to warfare held by armies the world over.

¹ This article is based upon a manuscript Steven Douglas Mercatante has recently completed exploring how close Germany came to winning the Second World War in Europe; a manuscript stemming from over two decades researching and studying the Second World War. Steven Mercatante is the founder and editor of the military history website The Globe at War – a web based community focused on the Second World War and which includes member submitted articles, book reviews, historical photographs, and features a military affairs oriented RSS news feed updated daily. The Globe at War can be accessed at www.globeatwar.com and article submissions are currently being accepted for publication. In addition Steven has also combined his interests in writing and history for an article entitled *The Deregulation of Usury Ceilings, Rise of Easy Credit, and Increasing Consumer Debt*, published in volume 53 of the South Dakota Law Review. Steven’s writing in the historical field goes beyond his research and draws upon his experience as a former history teacher, from his undergraduate studies in history at the University of Michigan, from his graduate work in history at Eastern Michigan University and from his study of international law at Michigan State University College of Law.

² Robert M. Citino, *Death of the Wermacht, The German Campaigns of 1942*, (University Press of Kansas, 2007) at pp. 3-5. See also Christopher Clark, *Iron Kingdom, The Rise and Downfall of Prussia, 1600-1947*, (The Belknap Press of Harvard University Press, 2006).

³ Robert M. Citino, *The German Way of War, From the Thirty Years' War to the Third Reich*, (University Press of Kansas, 2005) at page 82.

⁴ Robert M. Citino, *The German Way of War, From the Thirty Years' War to the Third Reich*, (University Press of Kansas, 2005) at pp. 83-90.

⁵ Robert M. Citino, *Death of the Wermacht, The German Campaigns of 1942*, (University Press of Kansas, 2007) at page 4.

⁶ The great military theorist Carl von Clausewitz, in writings published after his death, had, in the 19th century, finally codified this tradition.

⁷ Robert M. Citino, *Death of the Wermacht, The German Campaigns of 1942*, (University Press of Kansas, 2007) at pp. 3-5.

⁸ Richard Vinen, *A History in Fragments, Europe in the Twentieth Century*, De Capo Press, 2000 at page 57.

⁹ Peter McCarthy & Mike Syron, *Panzerkrieg, The Rise and Fall of Hitler's Tank Divisions*, (Carroll & Graf Publishers, 2002) at page 14.

¹⁰ B.H. Liddell Hart, *The German Generals Talk*, (William & Morrow Co., 1948) at pp. 10-12. See also Robert M. Citino, *Death of the Wermacht, The German Campaigns of 1942*, (University Press of Kansas, 2007) at page 255.

¹¹ The term "Blitzkrieg" never was a part of German military doctrine. It was used by various militaries in writings during the 1930's. See Robert M. Citino, *Death of the Wermacht, The German Campaigns of 1942*, (University Press of Kansas, 2007) at page 15. Although some argue a writer for Time Magazine coined the term on September 28, 1939 in describing Germany's speedy victory in Poland. See Karl H. Theille, *Beyond Monsters and Clowns The Combat SS De-Mythologizing Five Decades of German Elite Formations*, (University Press of America, Inc., 1997) at page 21.

¹² Robert M. Citino, *The Path to Blitzkrieg Doctrine and Training in the German Army, 1920-1939*, (Lynne Rienner Publishers, 1999) at page 25.

¹³ Ibid. at pp. 16-18.

¹⁴ James S. Corum, *The Roots of Blitzkrieg, Hans von Seeckt and German Military Reform*, (University Press of Kansas, 1992) at page 18-19.

¹⁵ Robert M. Citino, *Death of the Wermacht, The German Campaigns of 1942*, (University Press of Kansas, 2007) at page 15.

¹⁶ Robert M. Citino, *The Path to Blitzkrieg Doctrine and Training in the German Army, 1920-1939*, (Lynne Rienner Publishers, 1999) at page 183.

¹⁷ The name "tank" came from British attempts at disguising their experiments with tracked armored vehicles - following a demonstration by the world's first tank in September 1915 the British army ordered 100 "water tanks" James S. Corum, *The Roots of Blitzkrieg, Hans von Seeckt and German Military Reform*, (University Press of Kansas, 1992) at page 21-23.

¹⁸ James S. Corum, *The Roots of Blitzkrieg, Hans von Seeckt and German Military Reform*, (University Press of Kansas, 1992) at page 21-23.

¹⁹ Not just armored innovation stagnated. In Britain, the British Army chose to appoint a relatively inexperienced 24-year-old lieutenant, Basil H. Liddell-Hart, to address the tactical lessons from the First World War and rewriting the infantry manual. This was in direct contrast to events in Germany where Von Seeckt appointed experienced, well-trained General Staff officers to learn from and modernize German tactical and operational doctrine, training, and organization. James S. Corum, *The Roots of Blitzkrieg, Hans von Seeckt and German Military Reform*, (University Press of Kansas, 1992) at page 39.

²⁰ Karl H. Theille, *Beyond Monsters and Clowns The Combat SS De-Mythologizing Five Decades of German Elite Formations*, (University Press of America, Inc., 1997) at page 88.

²¹ Peter McCarthy & Mike Syron, *Panzerkrieg, The Rise and Fall of Hitler's Tank Divisions*, (Carroll & Graf Publishers, 2002) at page 15.

²² James S. Corum, *The Roots of Blitzkrieg, Hans von Seeckt and German Military Reform*, (University Press of Kansas, 1992) at pp. 126-127.

²³ Karl H. Theille, *Beyond Monsters and Clowns The Combat SS De-Mythologizing Five Decades of German Elite Formations*, (University Press of America, Inc., 1997) at pp. 100-102. Robert L. Dinardo, *Germany's Panzer Arm in WWII*, (Stackpole Books, 2006) at page 89.

²⁴ See Roman Johann Jarymowycz, *Tank Tactics From Normandy to Lorraine*, (Lynne Rienner Publishers, 2001).

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- ²⁵ Robert M. Citino, *The German Way of War, From the Thirty Years' War to the Third Reich*, (University Press of Kansas, 2005) at pp. 253-255.
- ²⁶ See Roman Johann Jarymowycz, *Tank Tactics From Normandy to Lorraine*, (Lynne Rienner Publishers, 2001).
- ²⁷ Peter McCarthy & Mike Syron, *Panzerkrieg, The Rise and Fall of Hitler's Tank Divisions*, (Carroll & Graf Publishers, 2002) at page 26.
- ²⁸ Peter McCarthy & Mike Syron, *Panzerkrieg, The Rise and Fall of Hitler's Tank Divisions*, (Carroll & Graf Publishers, 2002) at page 26.
- ²⁹ Robert M. Citino, *The Path to Blitzkrieg Doctrine and Training in the German Army, 1920-1939*, (Lynne Rienner Publishers, 1999) at page 231.
- ³⁰ Ibid. at page 231. The German Armored Army. Prepared by Military Intelligence Service War Department, Washington, Special Series No. 2 August 10, 1942, Unclassified July 113, 1987.
- ³¹ Robert L. Dinardo, *Germany's Panzer Arm in WWII*, (Stackpole Books, 2006) at page 137.
- ³² James S. Corum, *The Roots of Blitzkrieg, Hans von Seeckt and German Military Reform*, (University Press of Kansas, 1992) at page 127.
- ³³ James S. Corum, *The Roots of Blitzkrieg, Hans von Seeckt and German Military Reform*, (University Press of Kansas, 1992) at page 127.
- ³⁴ The *Falchirmjager* would hold the newly acquired positions until relieved by advancing troops.
- ³⁵ Robert L. Dinardo, *Germany's Panzer Arm in WWII*, (Stackpole Books, 2006) at pp. 90-92.
- ³⁶ Marcel Stein, *Field Marshal von Manstein, The Janus Head, A Portrait*, (Helion & Company, 2007) at page 17.
- ³⁷ Karl H. Theille, *Beyond Monsters and Clowns The Combat SS De-Mythologizing Five Decades of German Elite Formations*, (University Press of America, Inc., 1997) at page 103.
- ³⁸ Robert M. Citino, *The Path to Blitzkrieg Doctrine and Training in the German Army, 1920-1939*, (Lynne Rienner Publishers, 1999) at pp. 202-206.
- ³⁹ Peter McCarthy & Mike Syron, *Panzerkrieg, The Rise and Fall of Hitler's Tank Divisions*, (Carroll & Graf Publishers, 2002) at pp. 19-21.
- ⁴⁰ Robert M. Citino, *The Path to Blitzkrieg Doctrine and Training in the German Army, 1920-1939*, (Lynne Rienner Publishers, 1999). at pp. 204-206.
- ⁴¹ Roman Johann Jarymowycz, *Tank Tactics From Normandy to Lorraine*, (Lynne Rienner Publishers, 2001) at page 58.
- ⁴² Roman Johann Jarymowycz, *Tank Tactics From Normandy to Lorraine*, (Lynne Rienner Publishers, 2001) at page 58.