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Armor during WWII: The defeat of the superior Panther

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ARMOR DURING WWII: THE DEFEAT OF
THE SUPERIOR PANTHER

A Thesis

by

Phillip D. Clark

Submitted to the Graduate School of the
University of Texas-Pan American
In partial fulfillment of the requirements for the degree of

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August 2009

Major Subject: History

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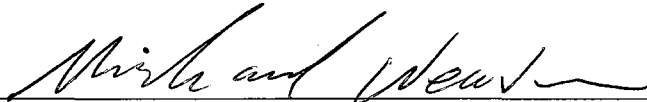
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August 2009

ABSTRACT

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It is the popular opinion among the masses that the Soviet Union's T-34/76 battle tank was the superior weapons platform during World War II when compared to the United States M-4 Sherman and Germany's Mk V Panther tanks. Through a combination of research and personal military knowledge and experience, I will demonstrate that the German Panther was indeed the superior battle tank in mobility, firepower, armor, and could, on a individual level (one on one), defeat not only the Soviet Union's T-34 tank, but all allied armor employed against it. I will further demonstrate that the economic stress placed on Germany's war producing capabilities led to her massive defeat, despite the Panther's impressive characteristics and competency in battle. Although the Panther did in fact reign supreme on the battle field against overwhelming odds, the definition of the tank throughout World War II also grew and expanded from its basic characteristics of mobility, armor and firepower. The superior design and performance of the Panther will also be pointed out as one of Germany's weaknesses since it could not be produced in equitable numbers with its enemies. This thesis shows a point by point comparison of the German Panther and its main adversaries, the T-34 and M-4 Sherman using factual data, logical reasoning, and cannot be negated with opinion and emotion.

DEDICATION

The completion of my thesis studies would not have been possible without the love and support of my family. Special thanks to my daughter Stacey D. Clark, who whole-heartedly inspired, motivated, and supported me by all means to accomplish this degree. Thank you for your love and patience. In addition, I would like to also dedicate this thesis to all of the brave men and women who served their respective countries during WWII.

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INTRODUCTION

Since World War II, many world-renowned scholars and historians alike have debated the efficiency and effectiveness of the various models of armored fighting vehicles employed during that great mobile war. The United States M4A3, the Soviet T34/76 or 85, and the German Panther V's effectiveness and efficiency in battle conditions will be examined and discussed in great detail. The questions that really need to be addressed are those that are never truly answered, such as which combat vehicle was superior on the battlefield during World War II?" What did the men who employed these combat tanks think about their performance during combat? Which combat tank had the greater survivability? Which tank could penetrate the most armor at the greatest distances in combat? Which tank destroyed the most opponents at any given time during continuous battle operations? Which tank from the above countries would most likely have prevailed if all things considered were equal in the amount of numbers employed? What were the strengths and weaknesses of the above tanks during combat? These questions will-- in almost all cases--be answered by the various amounts of factual data available from primary and secondary sources. The question as to which tank the individual soldier thought performed the best during combat may in some instances be biased. However, one fact did show some credible evidence as to their preference and

that fact was that all countries at some time during the war, either by necessity or preference, chose their opponents' tank over their own.

We will begin the examination of the above-mentioned tanks and their performance by first showing the need throughout history of the individual soldier to move quickly, fire quickly, and to protect himself from his opponents. Speed, firepower, and protection of the soldier were the necessities that led to the formation of the modern tank; therefore, we must have a basic understanding of the past in order to understand the development of this particular implement of war in the future.

Throughout history man has fought wars for numerous reasons; his ability to fight and survive these wars for leader and country depended on his individual skill and that of his choice of weapons. While the skill of the individual fighting man varied from culture to culture, so did that of the weapons employed in battle. The first fighting men depended on large numbers of like-minded individuals we will call soldiers who possessed the same abilities and skill in order to intimidate and overwhelm their enemies to win battles by hand. As time passed (or even during these hand-to-hand battles and struggles), some bright individual would advance the evolution of combat by introducing an equalizer, a stone, stick, spear, or some other weapon to enable his chance at surviving the clashing of soldiers. Hence, the use of weapons for individuals became the norm, while other more advanced cultures would most certainly have used and improved upon some type of weapon as a force multiplier for their own fighting men based on the lessons learned in the past. The progression of learning the art and trade of fighting was slow, yet steady. The introduction of new, different weapons was used to nullify an opponent's weapon advantage or even surpass it. The rock, spear, bow and arrow, and

slings were truly what could be coined distance weapons, since they were used by individuals to strike at an enemy from a safe distance without much fear of retaliation unless the enemy employed the same type of weaponry. The shield and padding of soldiers' garments were the first attempt to protect soldiers from these distance weapons. In some cases, they even provided a measure of protection from weapons used for close fighting. Added to the distance weapon innovation and the protection element for soldiers was the introduction of movement by whatever means was available to a particular culture. The horse was first and foremost the paramount animal used for the movement of armies, while elephants, ships, and the building of roads would further enhance and foster a different opponent's movements. The subsequent process--the invention of a weapon or weapon system--would quite naturally be countered by a weapon or system that was specifically designed to defeat that new weapon or system. This would continue throughout history in one form or another until a weapon or system was introduced that would dominate the battlefield for long periods of time. Added to the innovation of weapons were tactics and strategy. Tactics usually performed at the level of small-scale units or individuals, while strategy was the conduct of the overall campaign or battle that resulted in victory. At the tactical level, weapons were pitted against certain other weapons in order to achieve an advantage that could result in a strategic victory.

Prior to World War II, the debate on the use of armor was on how to best employ it, on defense, offense (either with or without infantry support), or if it could replace the role of the traditional cavalry. These issues would continue to be debated as the potential for the tank was explored and eventually utilized in combat. Once it was realized that the tank could in fact stand alone on penetrating operations, the race to field the best tank for

operations of World War II was on. The Germans, who perfected the role of the tank early on, preferred speed and mobility to that of armor, while the Soviets depended on simplistic design and cross country ability for their tanks, since they had the lead not on the tank's role, but its construction. The Americans, who entered the war late, and believed themselves to be at least equal to their allies and belligerents (if not superior), relied on their own untested experience to field a tank wholly adequate for combat operations. The American Sherman was built to specifications for the purpose of transportation, notwithstanding the scandal that would ensue over their employment by General McNair that will be discussed later. During World War II and after, the debate on the tank expanded not so much on its role, since operationally that had already been decided by the Germans and Soviets from 1939 through 1944, but into which tank could affect the operational role using the basic defining characteristic of speed, armor, and firepower the best. Heinz Guderian, the father of the German armored forces, suggested for practical purposes "to copy the T-34, since it was superior to anything that the Germans possessed at the initial invasion of the Soviet Union." Likewise, "German Generals Mellenthin and Kleist also preferred other tanks," as we shall see later in the discussion. David Glantz, a Soviet military historian, preferred the role of the T-34 to that of the Axis' armor's role and explained in great detail the building, formation, and role the T-34 played in the Soviet's great offensives later in the war. Since World War II, as will be pointed out later, numerous professionals and amateurs alike have debated the best tank of the war usually with an expanded definition of its basic characteristics, leaving the T-34 as the preferred tank. The flaw in those arguments will clearly show that the Panther was indeed the supreme tank, and that "production was the element that beat

the Panther and not the T-34 itself.” The Americans would also add to that of the Soviets the numbers of tanks produced and not the quality of the individual tank.

In order to understand the need for a weapon such as the tank, a basic understanding of the past will need to be introduced to better comprehend the tanks awesome fighting ability. The expanding role of warfare and the new technological inventions that accompanied the invention of the tank will also be discussed, along with a revisit of past ideas that influenced innovation.

For instance, during the Punic wars, the Carthaginian General Hannibal used what could be described as an all arms approach using infantry as a holding force, while his cavalry (which was superior to that of the Romans) would encircle his opponent’s force, then engage his reserves on the flanks to crush what was considered the best infantry of the time period. The uses of mobility added the elements of quick movement in large numbers to surprise and confuse the enemy in both the flanks and rear, thus achieving victory. Heavily armored knights of the middle ages were protected to a degree by chain mail and metal armor while using large draft horses for mobility. These men in armor were formidable when charging an enemy that often resulted in favorable outcomes; however, these knights--due to their heavy armor--lacked the staying power of lighter troops and had to be reinforced by lighter troops if their initial charge faltered. The longbow used by Henry V of England is another excellent example of a distance weapon of massive firepower used against the armor and mobility of the French. Nevertheless, it was the Mongols of Genghis Khan that perfected the use of mobility and firepower that was to overwhelm and defeat some of the greatest generals and armies of all time.

The Mongols' bow (which delivered up to a one-hundred-fifty pound draw), together with their mobility (which allowed them to close quickly and deliver massive amounts of firepower and withdraw just as quickly out of range of their opponents), was more than enough to decimate the armored knights of Europe. Mongol use of silk shirts and heavy animal garments allowed for a measure of protection against enemy arrows and still allowed them the flexibility to maneuver. Only upon the death of Genghis Khan did the Mongols withdrawal from the European theater of operations. Thus we see that the quest for advantage in battle first started with hand weapons, then distance weapons, followed by protection against those distance weapons, followed by mobility, and lastly, the use of all or a combination of weapons; this would continue until the introduction of gunpowder.

CHAPTER I

THE PROPULSION SYSTEM

The introduction of gunpowder allowed a soldier for the first time in history to fire a weapon that could not be stopped, either through protection or maneuverability. Although the firearm debuted slowly, it soon became the dominant weapon on the battlefield and would hold that preeminence until a specific system was designed to counter it. Until such time, the only options for the soldier were to avoid clashes in which firearms were used. Of course a soldier could fight back with his firearm, without protection and a guarantee of safety. While the most efficient way of not becoming a casualty (other than by avoiding battle), was through maneuver using a soldier's own power and/or an animal. However, there was still no guarantee that a soldier would not be wounded in battle. This was to be the norm and predicament for soldiers from the early 1400s until the beginning of World War I--a period of over five hundred years. So, of the three elements and characteristics of battle, firepower remained the dominant force in war, with mobility close behind, and the protection of soldiers coming in last. The technology of the 1800s was to prove to be a godsend for those who were interested in the art of war. With the introduction of the gas and diesel powered engines, war could be transformed once again.

With the invention of the steam and coal engines that provided mobility (in other words, trains) for armies in the 1800s and the legacy it produced for later inventions in the field of mechanization of smaller vehicles that could work harder, faster, and carry more weight would have to wait for another, more destructive war--World War I. World War I brought all of the elements and characteristics of the modern tank together at the same place and at the same point time in history. Firepower, mobility, and troop protection could all be achieved through the use of technology; the only other element needed was for the “present man of World War I to revisit the past and expand upon those ideas of men who had the right idea, but lacked the technological knowhow to build such implements of war on a scale never before heard of since the utilization of the horse, back in the mists of antiquity.”¹

Although many inventors are credited with gradually building specific stages of the modern gas engine and discovering new ways to use said engines, it is the diesel engine that we will be primarily concerned with just before and during World War II. This diesel engine had its roots in the past, with its beginnings traced to that of gas powered engines, which in turn traced their past to the steam tractor used for farming. The extremely slow progress of technology, however, is usually accelerated during times of war, as there is a larger need for production and more incentive to experiment with creative ideas in order to achieve victory on the battlefield. This was especially true during the Crimean and American Civil Wars, as they “helped bring about the industrial revolutions to both the British and Americans.”² Nevertheless, it was the Italians and

¹ Hart, Captain B.H. Liddell, The Tanks: The History of the Royal Tank Regiment and its Predecessors Heavy Branch Machine-Gun Corps, Tank Corps, and Royal Tank Corps 1914-1945 Volume I (New York: Frederick A. Praeger Publishers, 1959), 3.

² Ibid pg 13-14

Germans that led the field in the design and implementation of both the gas and diesel engine. These engines, which helped man with his manual labor, were the beginning of the mechanization process that had a profound effect on the building of a whole new transportation network. The engines being developed were to be used in the transportation of goods from the rail stations to the cities and towns that were located far from those rail stations. The development of these engines was to increase the output and movement of agriculture products and to foster a faster, more efficient, and cheaper labor cost. Once the race for the development and implementation got underway for these engines, there was no lack of imagination for what these new machines could potentially accomplish. Trains, ships, cars, trucks, motorcycles, and even air travel seemed possible now that a machine was capable of sustained output of work. Although trains and ships were to be the first recipients of this mechanization period due to the large amounts of goods being transported on water, it wasn't long before the need for a smaller vehicle was needed. These smaller vehicles came in the form of motorized tricycles and bicycles as a form of individual transport and recreation, the predecessors to the motorcycles. As the need to transport larger loads of goods and even entire families from place to place grew, the vehicles expanded in scope and size to fit the needs of individuals. Brands like Mercedes, Benz, Maybach, Romeo, and Ford became household names in Europe and America alike, for those vehicles were used to move both goods and people. Once the technological problems of these new machines with engines were promptly solved and mass produced for the common man, it was only a matter of time before these new inventions found their way into military service. The introduction of transport trucks and other vehicles during World War I freed numerous soldiers from the logistical services

that could otherwise be used for frontline duty. Again, the auspiciousness of war brought about the need for the introduction of this new technology into war. Prior to World War II, most engines ran on gasoline with a large number of those engines being used in the field of agriculture and industry. Even the “majority of the Panzer I, II, and III of the German Panzer divisions at the beginning of World War II ran on gasoline”³--otherwise known as benzene or petrol by the Axis nations. Only the Soviet Union and Great Britain experimented with and used diesel fuel from the onset of World War II, with Germany and the United States using gas-powered tanks. The Panther V tank of Germany and the T-34 tank of Russia would both use diesel engines, invented by Rudolf Diesel, during their struggle for dominance on the eastern front during World War II, while the Americans would use the “gas powered M4A3 Sherman when it engaged in battle with the Germans.” citation Both types of engines along with their respective fuels had their pros and cons when participating in combat against each other.

The pros of the diesel engine was that it provided a far greater ratio of horse power to miles per hour while increasing the power output and work load capacity. In other words, the diesel engine could outperform the gas engine by means of power for a vehicles load bearing weight. Diesel fuel, as a plus, is also less combustibile and cheaper than gasoline. The cons of diesel engines are as follows: They do not have spark plugs for their ignition process, so cold weather affects their ability to start which is especially detrimental given the Soviet winter of 1941-1942. Injectors are used for diesel to first heat the fuel, than ignite slowly, so as not to produce a intense combustion. Diesel fuel is also not as clean as gasoline and burns “dirtier,” leaving a plum of smoke that can easily be detected by the enemy. The pros of gasoline are that it burns cleaner and will start

³ Tank Data, Aberdeen Proving Grounds Series. (Old Greenwich, Connecticut: WE Inc.), 59, 137, 187.

easier at lower temperatures, while leaving little or no plum of smoke. The cons of gas under combat conditions were the explosive nature of the substance even if not hit directly in the fuel system. The vapor alone was enough to ensure a fire and/or explosion. In the economic sphere, gas was more expensive to produce, guaranteeing a greater tax for Germany and Russia on an already overburdened production system. Therefore, diesel was to be the main fuel for the Soviet T-34 before and during World War II, as well as for the German Panther V from 1943 to 1945. The Americans, in contrast, used both gas for their M4A3 and diesel for their M4A6/A2 tanks. Finally, during World War I, all the ideas of the past, together with the technological inventions of the present, and the continuous improvements of the tanks characteristics of the future, would lead to the development of the T-34, M4A3, and Panther V.

The timeline discussion on weapons, protection, mobility, and the mechanization of vehicles with engines and the technology that goes with it began, like many other things, as an idea. Again that idea began with war in mind. Some historians suggest that the idea of a tank could be traced to that of the chariot, war elephant, or even the armored knight. Since all chariots, war elephants, and knights had some form of firepower, mobility, and protection from weapons, they fit the basic definition of the tank; however, the all-important element of the *machine* is missing. Even the basic form of the machine--making work simpler for the user--is absent. Technological innovations such as guns and gunpowder are also not mentioned. The only picture that accurately portrays what modern society identifies as the modern tank is the one described by Leonardo Da Vinci in the following statement:

I am building secure and covered chariots which are invulnerable, and when they advance with their guns into the midst of the foe even the

largest of enemy masses must retreat, and behind them the infantry can follow in safety and without opposition...

-----Leonardo Da Vinci⁴

Da Vinci's drawing of his covered chariot met all the prerequisites of the modern tank--Firepower through guns, protection in the form of wood, leather and metal plating, mobility using manpower, technological innovation in the form of gunpowder with guns, and lastly, machines in the form of cranks, gears, and levers. A true weapons platform, according to Da Vinci, would lead the assault while providing protection for the masses of soldiers that followed closely behind the monstrosity. This weapons platform, and the tactic of infantry following behind it to break through enemies frontlines, was the idea that lacked the technological invention of the engine (specifically) that could provide sustained output of work. This was the "only weakness in Da Vinci's design—it was a weakness that would have to wait for the technology of the engine."⁵

Although it could once again be argued by historians that cranks, levers, and gears are machines, it could also be argued that they were not the right machine for the right job. Nevertheless, the idea of the war chariot remained waiting to be rediscovered by man or men that could apply the above knowledge into one definable war machine.

If any man was credited with the idea of the tank it was Leonardo Da Vinci. The successor of the war chariot and credit of the early armored cars along with their practical application and expansion of Da Vinci's idea belonged not to one man, but several men "like Simms, Daimler, Hornsby, Holt, Swinton, Hankey, Wilson, Christie and Tritton all played parts in the development of what came to be known as the tank."⁶ The "Landships

⁴ Whitehouse, Arch, Tank: The Story of their Battles and the Men Who Drove Them from Their First Use in World War I to Korea (New York: Doubleday & Company, 1960), 1.

⁵ Hart, Tanks Volume I, 11

⁶ *Ibid*, pg. 21-23

and Invention Committees of Great Britain, along with Swinton were to be the catalyst for this top secret project which was code named ‘tank’ by Swinton.”⁷ Swinton is credited with bringing all the above ideas, inventions, and men together at the right time and place to build upon the ideas of the past.

Though it was Swinton who was the guiding hand for the building of the tank, it was J.F.C. Fuller’s ideas that would put forth the practical application of the tank by using it en-mass during combat operations on a massive scale. Fuller’s ideas on the use of the tank were never fully implemented during World War I, for that Great War ended before they could be used. It would be “another far more destructive war and a different nation that would implement Fuller’s ideas.”⁸

That nation was to be Germany, the country that made war on the world and that would fight some of the strongest foes ever faced in combat--the Soviet Union and the United States who would bring to bear their own armies, along with their tanks, to challenge those of Germany for preeminence of what was once called the Elite Calvary.

Between the years 1939-1945, the world was engulfed in what the majority of historians consider the greatest test of arms in the twentieth century—World War II. What made this war so intense, widespread and deadly, and destructive was not only the geo-political ideology extending throughout the European continent at the time, but also due to the introduction of implements of war through mechanization on a scale unheard of in any previous war. This mechanization process, which allowed armies to move faster, further and with much more firepower, transformed the cavalry arm into an elite armored one. This new armored implement of war (specifically the tank) combined the

⁷ Ibid, pg. 47

⁸ Ibid, pg. 201

speed and surprise of the horse, the precision and shock of massive firepower, and the durability of armor plating when combined would ultimately prove astronomically effective in providing protection for a crew against enemy infantry. These three elements--speed, accurate firepower, and durable armor--were the desired combination of qualities that the Germans, Soviets, and later the Americans were seeking to enhance their military capability. Of course, it was the British idea that paved the way for first the Germans and Soviets. In fact, even Adolf Hitler (at a meeting in Kummersdorf for the demonstration of recent motorized troop development) was much impressed by the speed and precision of movement of [the] units and stated repeatedly “That’s what I need! That’s what I want to have!”⁹ Other national military leaders like Lieutenant General Gifford Le Q. Martel (of Great Britain), when speaking of America Stated, “mechanized warfare had a natural attraction for this great nation.”¹⁰

The mechanization process, however, did not begin in World War II, but in a previous war, a so-called “war to end all wars”—World War I. In 1914 Europe was split into two opposing camps of armed militaristic, nationalistic, and imperialistic nations known as the allies and central powers. The allies made up of France, Britain, Russia, and later the United States and Italy, were opposed by the Central Powers. The Central Powers were Germany, the Austro-Hungarian Empire, Bulgaria, and the Ottoman Empire. These two opposing camps were the main participants in World War I, with many other European countries and their colonies choosing one side or the other.¹¹

⁹ Guderian, General Heinz, Panzer Leader (Costa Mesa, California: Second Noontide Press, 1990), 30.

¹⁰ Jarymowycz, Roman Johanne, Tank Tactics: From Normandy to Lorraine (Boulder, Colorado: Lynne Rienner Publishers, 2001), 23.

¹¹ Goralski, Robert, World War II Almanac 1931-1945: A Political and Military Record (New York: G.P Putnam’s Sons, 1981), 426-428.

The war began on July 28, 1914, when Austria declared war on Serbia, an ally of Russia. Declaring war on Serbia was Austria's response to the murder of Archduke Francis Ferdinand and his wife (heirs to the Austrian throne) by a Serbian Nationalist named Garvrilo Princip. Due to the alliance of the central powers, the war quickly escalated and spread throughout Europe. During the Great War, the military of each warring nation still depended on the tried and true methods and tactics of war that their forefathers had relied on. These methods included massed infantry attacks along with artillery support to break through the opposing infantry lines, followed by the cavalry's pursuit and exploitation of that break in the enemy's line. However the invention of the machine gun (a semi-new technology) produced a stalemate in the fighting between the Germans and French lines. This new method the Germans and French instituted (while fighting one another in the west on their borders) was fighting with parallel infantry lines while employing the advantage of deep trenches and bunkers echeloned in depth. The new trench warfare had a paralyzing effect on the soldier's morale and fighting abilities, which led to further hopelessness and consequently, more stalemates in battle. The huge loss of men in the first year of battle and the overwhelming firepower of the machine gun convinced many generals and soldiers alike that utilizing massed infantry frontal assaults was futile, so they began to look for new methods of conducting warfare. The battles in the east between Russia, Germany, and the Austro-Hungarian Empire also led to trench warfare in some places, but were less mobile in the west. Those battles in the east provided a more limited (foot paced/horse paced) movement.

The Soviets who were ill led, poorly trained, and badly equipped, were severely and decisively beaten in battles such as Tannenburg. The above Soviet disadvantages,

together with huge losses of over two million killed and wounded in 1915 alone, led to political and economic instability that forced the Czar of Russia to abdicate in March 1917. The new leaders that finally emerged out of the turmoil of Russia were to be Lenin's Marxist/communist government. Lenin's government realized that the prolongation of a war would endanger the prosperity and longevity of the countries fresh start. Hence, in March of 1918, the Soviets signed a treaty with Germany that enabled Germany to transfer large numbers of troops to the trenches in the west that produced large-scale offensives by the Germans that nearly succeeded in breaking the French front lines that may have led to victory. Only the intervention of the Americans material and soldiers in large quantities, together with the British and French ability to learn the art of the machine gun, stopped the Germans. Prior to the large scale German offensives of 1917-1918, at such battles like the Somme in September 1916, the British introduced a peculiar armored tractor with machines guns that experienced brief successes in penetrating the German front lines before breaking down. "In December of 1916, a young enterprising and dynamic British officer became the First Chief General Staff Officer of the Royal Tank Corps..."¹² This officer's name was J.F.C. Fuller, who studied such battles like Cambria on November 20, 1917 in which the British used this new tractor for the first time and again were stopped short. The lesson was not lost to "Fuller, who quickly grasped the significance of this new weapon."¹³ Fuller, persuading General Rawlinson to use massed tanks, airplanes with artillery and infantry support at the battle of Amiens on August 8, 1918, produced the desired results by breaking through the German front lines causing the Germans to fall back and ultimately allied victory. The

¹² Simkin, John, "Spartacus Educational John Fuller." publication date unavailable. <http://www.spartacus.schoolnet.couk/FWWfuller.htm> 13 (June 2007).

¹³ Ibid.

battle of Amiens convinced higher- minded, imaginative young officers from several nations that a new era of weapons development had begun--an era that involved armored mechanized troops. This new weapon was not the predominate weapon of the First World War; however it could be to those who understood its significance and applied it. After World War I, as the excitement of “producing and utilizing this new implement of war was wearing away and waned, the end of Great Britain’s tank corps was threatened.”¹⁴ Yet another nation, along with their brightest and imaginative men would take a particular interest in this new technology and would not let this idea falter into obscurity. That nation would be Germany.

The Americans, for their part, who had intervened as an ally quite late in the war were exposed to the same outdated tactics used by their European counterparts and therefore mimicked them. Since the Americans recognized the faults of their allies, it seems safe to assume that many in the American Army began to question their allies’ tactics and use of new weaponry and began to understand the importance of the new tactics, technologies, and weapons used by their enemies. Consequently, the American Army experienced discontent with its own technologies and weapons as they became increasingly open-minded to change. Unfortunately, this open-mindedness did not apply to the higher ranking officers. Because of the ranking officers in the American Army, America would not delve into the idea of weapon and technology modification quite yet, even though the idea was constantly escalating in the back of their minds, for they had no need to resort to these new tactics and weapons at the moment, as they found success in the First World War due to another advantage. America’s intervention in the war was greatly successful not because of its weapons, tactics, or even leadership, but because of

¹⁴ Hart, Tanks Volume I, 199.

its numbers. In other words, the massive amounts of men and material that America contributed to the war were enough to outlast the German economic sphere. The German economic resources were exhausted after approximately four and a half years of fighting the allied nations and could not overcome the overwhelming numerical superiority of their enemies.

Therefore, in November of 1919, the Germans signed the Treaty of Versailles ending World War I. This humiliating treaty (for the Germans) would set the stage for a war that would exact revenge for the Germans at a later date and justify that revenge for them. Several military lessons and achievements were learned and generated from this war, among them were the following; 1. New weapons were used for the first time in combat like tanks and airplanes. 2. New tactics and strategies were needed to accommodate these new weapons and 3. Men would be needed who understood the significance of both 1 and 2 became a necessity.

Such men have already been mentioned—Swinton, who along with Colonel Hankey, introduced the idea of the tank to the First Sea Admiral Churchill, suggested committees be formed to implement Swinton’s ideas. Another such man has also been mentioned—General Fuller. Fuller managed to develop a “plan called 1919... This plan called for massing of numerous tanks, planes, artillery and soldiers, (a combined arms approach to war) for the rapid mobile movement needed to overwhelm the enemy’s forces and bring the battle to a decisive conclusion in favor of the mechanized forces.”¹⁵ The Germans adopted the use of this plan 1919 during World War II with westerners coining the phrase “Blitzkrieg” to describe Germany’s quick armored victories over most

¹⁵ Jarymowycz, Tank Tactics, 13

of Europe. In this armored Blitzkrieg, the tank became the new queen of battle, demoting the infantry (the old queen) to mere supporting pawns.

Men that were needed to instill an inventive set of ideas while transforming their countries armor into a new potent weapon used the Spanish Civil War of the 1930s as a catalyst for learning and training. Some of these men are among a long list of visionaries that includes the following: General Lutz, General Guderian, Field Marshall Rommel, General Hans Von Seeckt, General Von Kleist, General Von Thoma and Field Marshall Rommel are considered to be Germany's foremost tank experts, with special emphasis on General Guderian. Van Voorhis, Adna Chaffee, George Patton, and Omar Bradley are the considered experts in the United States just prior to and during World War II, with special emphasis on Chaffee and Patton. General Fuller, Captain Hart, Colonel Swinton, Colonel Hankey, and Commander Wilson are considered to be Great Britain's founding fathers of all the modern twentieth century countries' tanks and advocates of armored warfare and tactics prior to World War I and after. "General Fuller, General Percy Hobart, General O'Conner, General Martel, General Horrocks, and General Auckinleck, are considered to be Great Britain's experts prior to and during World War II in the practical application and use of the tank.¹⁶

Russia deserves special mention in the discussion on tanks due to its backwardness. Russia borrowed heavily from other nations to supplement their lack of imagination in the field of innovational technology. Men such as Mikhail Koshkin designed tanks for Russia, with most of the design already based on the models created in Great Britain, France, and the United States. Boris Shapeshnikov was to Russia what Von Seeckt was to Germany, the one individual whose plans encouraged the expansion of the

¹⁶ Hart, Tanks Volume I, 230-254.

Red Army along with the massive output of tanks. Mikhail Tukhachevskii of Russia was the “foremost expert in tactics and deep penetration strategies that eventually led to the defeat of German armies on the eastern front and is still considered today by most military experts as the man who redefined strategy using tanks.”¹⁷ In “France, Jean Baptiste Estienne is considered the father of the tank arm, with General Charles de Gaulle and General LeClerc being the foremost experts in their application and use during combat in World War II.”¹⁸ For the purposes of this discussion, we will concern ourselves only with those men and countries that bear relevance on the issue of the Panther, T-34, and M4A3 Sherman. Beginning first with short histories of the United States, Germany, Russia, and the basic doctrines of the tank will be discussed.

In the United States during World War I, the “war department approved a US tank corps of twenty five battalions, of which less than thirty machines were ever produced and none were ever sent overseas to fight.”¹⁹ In the post World War years of 1920-1938, the United States disbanded its tank corps with the National Defense Act and “ordered it absorbed by the infantry.”²⁰ While the United States Army argued over the doctrinal use (infantry support versus cavalry support) of the tank and the role it would play in the future of armed conflict, the “father of American armor Colonel Adna R. Chaffee Jr. was assigned to Fort Knox Kentucky (the home of today’s American armor) in May 1931 to command the remnants of the tank forces that were reassigned to the cavalry branch.”²¹ “Chaffee’s persistent work of over nine years, together with the German blitzkrieg victories over Poland and France finally convinced the United States War Department to

¹⁷ Jarymowycz, Tank Tactics, 287.

¹⁸ *Ibid*, pg. 49

¹⁹ *Ibid*, pg. 23

²⁰ *Ibid*, pg. 27

²¹ Jarymowycz, Tank Tactics, 29

act, creating the first armored force in United States history on July 10, 1940.”²² Chaffee was promoted to Brigadier General and “appointed the first Chief of the newly created American armored force on July 10, 1940.”²³ The break with the infantry and cavalry was finally complete and it would be another two years before this new armored force could practice its trade on the beaches and interior of North Africa. However, in the Louisiana maneuvers of 1941, in a two-phased contest that lasted less than a month with 400,000 troops taking part, vehicles were used in place of armored tanks, which resulted in a convincing victory by the artillery.²⁴ This victory by the artillery would lead to the Great American Tank Scandal, which in turn, led to the building of a smaller armored tank for the American armed forces.²⁵

Since its introduction, the tank, like every other branch of the military at the time, needed to have a set of basic principles for which to operate under combat conditions. These basic principles for the military--specifically the tank--were known to military experts as doctrine. This doctrine essentially defines those principles in detail of what the tank is supposed to be, and why and how the tank is used in order to achieve or support its countries national objectives.

The first doctrinal definition we must examine answers the fundamental question, “What is the tank?” During both World Wars and the years in between them, it was generally accepted that the tank was nothing more than a simple weapons platform that was mobile and had the ability to provide its occupants with protection. The second question we must answer is, “why use the tank in the first place? What is its purpose?”

²² Ibid, pg. 71

²³ Ibid, pg. 73

²⁴ Ibid, pg. 72

²⁵ Ibid, pg. 259-262

Obviously (as stated previously), the tank, like all other inventions during warfare, was to be used to achieve a set of objectives, either for the military or nation for victory. The third and final question is, “how must one utilize the tank in combat to achieve or support those national objectives?” This single question has caused numerous debates and confrontations for the different militaries of the world (not to mention the various historians and military historians of the present) in the 1920s and 1930s. These three basic principles were the underlying doctrine that Heinz Guderian expanded on, emphasizing how to use it in a combat role. Guderian commented in his book Achtung Panzer that the tank should have “armor plating sufficient to be impervious to armor-piercing bullets fired from machine guns, movement to surprise and bring troops into contact, and firepower so superior that the enemy’s powers of resistance [collapse].”²⁶ Guderian further realized that by using concentrated massed tanks with support of planes, artillery, and infantry (while focusing the attack at a predetermined site) was the key objective in procuring a breakthrough in the enemy’s defense while paralyzing their ability to react. By accepting Guderian’s basic doctrines, the German military proceeded to wage war using those very doctrines that other countries adopted only after entering World War II, and usually through trial and error. The characteristics of the tank (along with its doctrines) will later be compared using accurate battlefield statistics and reports by the three countries that engaged in battle with one another during World War II. These three countries, the United States, Russia, and Germany, using what they themselves regard as their own best tank, will be compared for the purpose of analyzing and concluding what the best characteristics and doctrinal use of their perspective tanks were.

²⁶ Guderian, Panzer Leader, 39-46

Translated, the combat performance will be analyzed and compared when each of these countries tanks were pitted against one another in combat, one on one.

The following three tanks were the M4A3 from the United States (better known as the Sherman, as it was named after the great Civil War General William Tecumseh Sherman), the T-34/76, or T34/85 from Russia, and the Panzer from Germany, otherwise known as the Panther. Although there were many variations of these three tanks (especially in regards to the M4 series of the United States), only the best and—in almost all cases—most used variant will be considered when making the comparisons when pitted against each other in combat. For example, the M4A3 was the best and most widely used overall for the United States based on production numbers and numbers used in combat in the European Theater of operations. The Soviet T-34/76, and T-34/85 tank was the best and most used variant for Russia.

The Soviet tanks' two variations, however, had to do with the tanks upgraded gun from the 76mm to the 85mm due to the battle conditions brought on by the German Panthers and Tigers. Hence, the designation of 76/85 referred to the caliber of the Soviet tank's gun. While the Panther was considered Germany's best tank, it was not the most produced, that honor belonged to the MK IV panzer. Therefore, this shall be the sole exception to the rule that a country's best tank was also its most widely produced. These three tanks fought each other on numerous occasions and on the many fronts of World War II. This was carried out due to the United States' lend-lease policy, which supplied the Soviet, British, French, and other countries with the new Sherman Tank. Over ten

thousand tanks were shipped to the Soviet Union, of these, over “seven thousand were lost in route to German bombers and submarines.”²⁷

From this point on, the M4A3 American tank will conveniently be referred to as the Sherman. The production of the Sherman began very quickly once General Chaffee had the War Department’s approval to create an armored force, seeing as the horse cavalry had long since faded from the scene and into the history books of the United States. “The Sherman’s characteristics and specifications were submitted to the War Department’s Ordnance department August 31, 1940 and final specifications were approved April 18, 1941.”²⁸ “By September 2, 1941 the first pilot model was completed.”²⁹ “The standardization process and final mass production began in February 1942.”³⁰ This mass production process not only led to the building of the American armored divisions, but to the supplying of the British and Soviet allies as well. The following is but two examples: “Prior to the battle of second El Alamein that began October 22, 1942, the Americans had shipped over three hundred Sherman’s to the British eighth army to use against the German African corp.”³¹ In the “battle for Russia, beginning in the fall of 1942, through 1945, the Americans shipped over five thousand medium tank’s to the Russian Motherland to help in her time of need.”³² This demonstrates in part the awesome production capability that the United States possessed during such a short time; added to that of the Soviet’s. Among the best known producers of the Sherman were the “Chrysler Cooperation, American Locotive Company,

²⁷ Goralski, *Almanac*, 171

²⁸ Conners, Chris, “Medium Tank M-4 Sherman.” Publication date unavailable, <<http://afvdb.50megs.com/usa/m4sherman.html>> (June 2007).

²⁹ Ibid

³⁰ Ibid

³¹ *World War II Encyclopedia: Volume 14* (H.S. Suttman Inc. Publishers), 1042.

³² Glantz, David M, *Colossus Reborn: The Red Army At War, 1941-43* (Lawrence, Kansas: University Press of Kansas, 2005), 249.

Baldwin Locomotive Works, Detroit Tank Arsenal, Federal Machine and Welder Company, Grand Blanc Tank Arsenal, Lima Locomotive Works, Montreal Locomotive Works, Pacific Car and Foundry Company, Pressed Steel Car Company, Rock Island Arsenal, the Ford Motor Company, and Pullman Standard.”³³ These producers, along with many others that provided the needed parts, created what was termed at the time “the Arsenal of Democracy.”³⁴ This arsenal once again did what it had done during World War I, and that was to overwhelm the Germans, if not by force of combat, then by sheer numbers put on the battlefield as in the First World War. Tank economic attrition, rather than battlefield attrition, was once again the determining factor that the Germans (specifically Hitler) never seemed to agonize over during a time when other things took precedence. The American Tank Scandal (the argument with General McNair over antitank guns, drawn and self propelled verses heavy tanks and their supporters) and the need to transport large numbers of tanks overseas to numerous theaters of operations called for a lighter tank. In all fairness, the Germans seemed to hold their own on the issue of battlefield tank attrition.

Mikhail Tukhachevskii defined the Soviet Union’s tank doctrine just as Chaffee did for the United States and Guderian did for Germany. In the Soviet Union, the means to achieve approval to create a tank force took a very different path than that of the United States and Germany. The Soviet armored force had to approved and sanctioned by the infamous Joseph Stalin. In the United States, the period of approval had to work its way through a long line of military bureaucracy, albeit a methodical procedure due to the democratic process. In the Soviet Union, on the other hand, Tukhachevskii had a most

³³ Tank Data, Aberdeen Proving Grounds Series. (Old Greenwich, Connecticut: WE Inc.), 187.

³⁴ Sherwood, Robert E. Roosevelt and Hopkins Article; An Intimate History 1st edition New York, Harper 1948

enigmatic and willing ally who held absolute power. This ally was none other than the notorious Joseph Stalin mentioned above. Stalin held the view that the Soviet Union had room enough for both “Cossacks and armored arms.”³⁵ This idea differed greatly from the view of the Americans and Germans who believed that separate military branches were necessary, and that there was only room for one or the other due to the limited resources. Due to Stalin’s influence, the Soviet Union was able to “quickly outstrip western experiments and production by fielding an entire mechanized corps by 1932.”³⁶ Tukhachevskii, who did not survive the Stalin’s purges of the 1930s, also laid the groundwork for the Soviet “deep penetration theories that helped the Soviet Union recover the initiative in 1943 and eventually win the war for them.”³⁷ Marshall Tukhachevskii’s theories were most responsible for the Soviet Union’s long history and ability to dominate all other armored warfare theories and concepts. His theories dominated all the way up until the Air-Land Battle concept of the 1980’s (better known as the Weinberger Doctrine) was introduced. Mikhail Koshkin, a soviet engineer, picked up where Tukhachevskii left off, as he was selected by the Red Army. With Stalin’s approval, he designed replacements for the older soviet tanks, while designing one of his own. “Koshkin set about his task using the Christie suspension from earlier soviet tanks that was purchased from the United States.”³⁸

Koshkin, who already had a basic design in mind expanded upon his own ideas. He took and combined ideas from the different tank designs that he felt were the best,

³⁵ Jarymowycz, Tank Tactics, 46

³⁶ *Ibid*, pg. 47

³⁷ Nikolayevich, Mikhail, Stalin’s Generals Edited by Harold Shukman (New York: Weidenfeld and Nicolson Grove Press, 1993), 255-284 and Jarymowycz, Tank Tactics, 287.

³⁸ Parada, George, “Achtung Panzer” origination date unavailable.

<<http://www.achtungpanzer.com/t34.htm>> (June 6, 2007).

while adding those of his own, and produced his first tank. This “Frankenstein” tank that had taken the best parts of numerous tanks available at the time was named the T-34/76. The T stood for fast tractor, or fast tank from the Russian word “Betka,” depending on the translation. “Two prototype T-34/76s were built in January 1940, and by September 1940 the first mass production of the T-34/76 rolled of the lines in Russia.”³⁹

When Germany attacked the Soviet Union on June 22, 1941, production of all other tanks was stopped and emphasis shifted to the mass production of the T-34 only. The German’s quick and effective advance forced the Soviets to close tank factory production sites in Moscow, Tula, Stalingrad and other sites and move their production site beyond the Urals. The period of August 1941 through March 1942 was the critical period in Russia, since the T-34s were only built in limited numbers.

In Germany, the design and production of the tank took a slightly different course than the United States and Soviet Union. After Germany’s defeat in World War I, the country’s military production of armored vehicles was limited by the Treaty of Versailles. “Germany’s military response under the redoubtable Hans Von Seeckt set up secret training centers (Kazan in the Soviet Union) abroad to formulate doctrine and training for their future tank and airplane forces, while using the Spanish Civil War of the 1930s as cover to further test their doctrines.”⁴⁰

The German armored force was thus created in 1935 due in large part to Germany’s number one armored advocate--the incomparable Heinz Guderian. General Guderian, who incorporated the use of the tank, along with an all arms combination approach for

³⁹ Ibid.

⁴⁰ Ripley, Tim, The Wehrmacht: The German Army in World War II 1939-1945 (New York, NY: Brown Partworks Limited, 2003), 22.

offensive operations (which he had learned from British General Fuller), is considered to be the father of the German Panzer forces.

His book Achtung Panzer was well received by Germany's notorious leader Adolf Hitler – who at the very least – recognized the potential of this new weapon of war. When Germany invaded the Soviet Union on June 22, 1941 (operation Barbarossa), T-34/76 tanks were encountered on the battlefield as early as June 23-24, 1941. “In response, Guderian dispatched a team to analyze the T-34/76 characteristics and devise a way to counter this new Soviet threat.”⁴¹ This German team recommended a proposal to build a new tank based on the T-34/76 sloped armor design. “This new [German] design was accepted in May 1942, with the first prototype being produced by September of 1942 and mass production beginning in December of 1942.”⁴² This new German tank would eventually be dubbed the Panzer (more commonly known as the Panther).

General Mellenthin of Germany, when speaking about the T-34, stated “we had nothing comparable with the T-34, with 50-mm maximum armor, 76-mm high velocity gun and relatively high-speed with splendid cross country performance.”⁴³ On the other hand, General von Manteuffel of Germany stated, “tank design must aim at a careful balance between armor, weapons and speed. The Panther was on the right lines,”⁴⁴ General Von Thoma, also of Germany stated, “If I had to choose between a thick skin or

⁴¹ Guderian, Panzer Leader, 237.

⁴² Parada, George, “Achtung Panzer,” origination date unavailable
<<http://www.achtungpanzer.com/pz4.htm>> (June 6, 2007).

⁴³ Mellenthin, Major General F.W. Von, Panzer Battles, first American Edition Translated by H. Betzler, Edited by L.C.F. Turner (Norman, Oklahoma: University of Oklahoma Press, 1956), 153-154.

⁴⁴ Hart, Captain B.H. Liddell, The German Generals Talk (New York, NY: William Morrow & Company, 1979), 101

a fast runner, I would chose the latter.”⁴⁵ “Their T-34 tank was the finest in the world--- General Von Kleist.”⁴⁶

“The officers at the front were of the opinion that the T-34 should be copied, since this would be the quickest way of putting to rights the most unhappy situation of the German Panzer troops.”⁴⁷ “The Panthers were still suffering from the many teething troubles inherent in all new equipment, when speaking about their performance after the battle of Kursk.”⁴⁸ “The Panthers did not come to expectations; they were easily set ablaze, the oil and gasoline feeding systems were inadequately protected.”⁴⁹ The Panthers were still in their infancy and were a failure, General Mellenthin when speaking of the Panther performance after the battle of Kursk,” which was the largest tank battle in history and fought in July, 1943.⁵⁰

The comments above reflect the feelings--and in some cases--the personal experiences of some of Germany’s top Panzer Generals up until 1943. The T-34 and Panther did not meet in combat until the battle of Kursk in the summer of 1943 due to Hitler’s insistence that they be employed for this battle that Guderian opposed. “Guderian suggested that the Kursk offensive be called off so as not to fetter away Germany’s armor and its reserves, while Hitler privately also did not support the attack, but supported openly the Generals who believed in the attack, such as Manstein.”⁵¹ This rushing into combat of the Panthers by Hitler led Guderian to conclude that his analysis was correct in stating the Panthers were not battle ready operationally, and would give away the surprise

⁴⁵ Ibid, pg. 99.

⁴⁶ Ibid, pg 221.

⁴⁷ Guderian, Panzer Leader, 276.

⁴⁸ Ibid, pg. 307.

⁴⁹ Mellenthin, Panzer Battles, 229.

⁵⁰ Ibid, pg. 231.

⁵¹ Guderian, Panzer Leader, 306-308.

of this tanks technology to the Soviets. In this regard, Guderian was right, for during the battle of Kursk, a “Soviet radio message intercepted by the Germans -- claimed hits on their tanks of over 2000 meters by this new fascist tank.”⁵² Guderian, Germany’s foremost expert on the tank had, on numerous occasions, stated his reasons for not supporting the Citadel offensive against Russia. “I spent June 15th worrying about our problem child, the Panther; the track suspension and drive were not right and the optics was also not satisfactory.”⁵³ These two corresponding references to the Panther by very different sources vindicate Guderian’s view that the Panther was not ready for battle.

Later professional soldiers like Generals Guderian and Kleist were to capitalize on the negative aspects of the Panther by not providing the full and complete story of the Panther’s production and battle history by focusing exclusively on the above negative references. Although the Panther did indeed suffer from some of the above malfunctions, they were corrected after the battle reports of Kursk reached the producers, who made every effort to fix Guderian’s problem child. Another equally but important problem was that of identification between the Panther and the Tiger I. “The slower moving and under powered Tiger I would sometimes be confused with the Panther,” since the Panther was actually a little larger than the Tiger I.⁵⁴ As will be pointed out later in the discussion, the Panther was not only larger than the Tiger confusing the allies, but more deadly and potent in killing the allies. While on the eastern front it will also be pointed out later that the Soviets referred to all German tanks as Tigers. “To the ordinary Soviet troops all German Panzers were known as Tigers; a corresponding picture in this source clearly shows a Panther V tank with the letters TIG (in Russian) demonstrating the confusion in

⁵² Parada, “Achtung Panzer,” pz4.

⁵³ Guderian, *Panzer Leader*, 310.

⁵⁴ Parada, “Achtung Panzer,” pz4.

tank identification.”⁵⁵ The Tiger’s underpowered engine has to be constantly replaced due to the high weight to horsepower ratio that wore out the engines. Transmissions would break due to the torque placed on it by the under powered engine and the “steering mechanisms were faulty and sometimes attributed to the panther.”⁵⁶ The numerous problems with the different types of tracks the Tiger had to employ were another concern. The “Tiger had one set for transport and one set for cross country battle, this cost the crews and maintenance personnel long periods of man hours that could other wise be employed elsewhere.”⁵⁷ The above strengths and weaknesses of the Panther will again be discussed in detail in the following pages. That the Panther was misidentified needed to be clarified, since many of the problems associated with it were in reality those of the Tiger.

As stated earlier, the men of Germany who best understood the concept of the panzer battles were those who by nature were aggressive, no nonsense, professional soldiers that focused their energies on the problems of tactics, training and improving the combat forces that they commanded, those of the panzer divisions. General Von Kleist from Germany, who graduated from the tank training school in Kazan Russia, became one of the leading German field commanders in Southern Russia. Marshall Erwin Rommel’s popularity with the military was well known before the war, as he wrote such books as Infantry Attacks, based on his experiences from the First World War. Rommel, the idealistic and open minded officer that he was, adapted quickly to the armored arm, utilizing his tactics that he himself adapted as an infantry officer in some instances.

“General Manstein, who, according too many German and allied generals was the best

⁵⁵ Ibid

⁵⁶ Ibid

⁵⁷ Ibid

strategist and brains in the German army on offensive and defensive operations in the war should have been in charge of the panzer arm.”⁵⁸ General Balck, General Rauss, General Mellenthin, Colonel Marcks (later promoted general), General Manteuffel, Field Marshal Model, General Nehring, General von Schweppenburg, and so many others from Germany are credited with staving the hordes of Soviets due to their understanding and use of the Panzer arm.

Special mention must be given to “General Oswald Lutz, who was the first commander of Germany’s first motorized corps with Guderian as his chief of staff.”⁵⁹ Like all great partnerships, Lutz was to Guderian as Ike was to Patton. Both Lutz and Ike were even tempered and well liked professionals that displayed an air of confidence in their subordinate’s abilities to accomplish the missions assigned to them. Guderian, like Patton, was fiery, brash, rude, and domineering when dealing with superiors and subordinates alike. General Lutz provided the needed guidance while smoothing the rough edges of Guderian’s jagged remarks, while continuously promoting Guderian’s ideas on the use of the tank in an all combined arms army unit. Another equally important German General was Hans Von Seeckt, who is first credited with maintaining a one-hundred-thousand man army made up of only the best professionals due to the Treaty of Versailles’ restriction on the number of soldiers Germany could retain. Experimenting with new ideas such as the tank and airplane in Kazan Russia (which was in complete and utter violation of the Treaty of Versailles) and providing the necessary training of this hundred-thousand man army that could on a moments notice expand tenfold was the spark that Hitler needed to expand such a large professional corps of officers. “General

⁵⁸ Guderian, *Panzer Leader*, 302.

⁵⁹ Ripley, *Wehrmacht*, 29.

Seeckt, more than any other man besides Hitler, is the most responsible for keeping the German army intact and functional in an era between World Wars.”⁶⁰ The above mentioned men of Germany were the epitome of industrious, daring innovators that helped Germany during their most spectacular years of the Second World War victories in the years 1939- 1942.

In all fairness, those German innovators of war could not have possibly achieved the results that they did without the mechanical innovation of the English and Americans such as Holt, who provided the caterpillar, Christie, who provided the suspension along with the different wheels and mounts, Ford who introduced the mass assembly line in producing vehicles, and Swinton who pushed his idea of the tank until its introduction in World War I. Least we forget the German and Italian mechanical innovators such Daimler and Fiat who both served their countries interest by producing the engine and Italy’s first tank, respectively. In respects to the Soviets, the T -34 was the most practical and up-to-date mass produced tank of World War II. When the Germans attacked the Soviet Union on June 22, 1941, they were shocked at the size and invincibility of this behemoth vehicle which was seemingly unstoppable. This encounter with the T-34 led directly to the invention and building of the German Panther, whose sole mission was to engage and destroy the Soviet Union’s best and most massed produced tank, the T34. Even the sloping armor of the Panther was based on the T-34. Naturally, the clashing of these two titans was inevitable, and at the battle of Kursk on July 20, 1943, both of these tanks collided in what is known as the largest tank engagement in history.⁶¹

⁶⁰ Ripley, Wehrmacht, 19.

⁶¹ Guderian, Panzer Leader, 311-312

The first two years of World War II was marked by the decisive defeat of Poland and France. Poland was attacked on September 1, 1939 by three major German formations made up of all combat arms units that were led by the new elite Panzer arm. The Germans, for this attack, had just over two-thousand-five-hundred tanks, many which were the Panzer II, III, and a few IVs. They were considered modern when pitted against Poland's less than eight hundred non-descript tanks. Without going into the major details of the entire campaign, it is sufficient to say that Poland's defenses were over run, with its capital reduced to ruins in a little over a month. The French and British expeditionary force that was posted on the German and Belgium border made demonstrations and limited, half hearted attacks that were quickly repelled, leaving Germany free to finish the Polish campaign. Russia also invaded Poland, claiming the eastern half of Poland and effectively sealing that country's fate. After the destruction of Poland's military forces, Germany was free to redeploy and beef up its forces on the French and Belgium border for their upcoming attack in the spring of 1941. Germany attacked France and the Low Countries on May 10, 1940, on a broad front, with the majority of the German Panzers attacking in the center and through the Ardennes Forest. The results were the same as in Poland--France surrendered in a little over a month on June 25, 1940. The reasons for these quick victories are numerous when taken altogether, but the fact remains the same for both campaigns--the tank played the decisive role in overcoming outdated, out molded, technological, and tactical defenses of the past. The German tanks' mobility, along with its armor, simply brushed off the ineffective firepower of its adversaries breaking through the enemies defenses and exploiting the command and communications centers located behind the frontlines of the French. The

result by these German incursions was massive French confusion, disorganization, and a slow response at the command levels. Another major result of the French defeat was even more significant--the tank was seen for the first time by the allies as the major implement of war that would be the deciding factor on the battlefield, at least in this new mobile war with Germany.

The next country that was the target of Germany's aggression was Russia, since these mobile land vehicles of destruction could not reach Britain. Germany launched its attack on Russia by three major formations just like in the Polish campaign on June 22, 1941, making more than significant progress. The German attack did not recede until the onset of the Russian winter and the counterattack by the Soviets in the Moscow sector (center German formation) on December 5, 1941 producing a stalemate.⁶² During the winter of 1941-42, both the Soviet Union and Germany settled down to a protracted traditional campaign that involved the rebuilding of their forces for the coming spring battles. Germany, due to its combat losses and the toll of the winter season, had at its disposal enough Panzer forces for spring offensive operations to continue only in one of its three major formations. This was to be in the southern sector towards Stalingrad and the Caucasus. Once the Germans achieved this spectacular thrust, the Soviets countered by surrounding the German sixth army and forcing its surrender. This was done by the same tactics that the Germans had employed earlier in the war on the Soviet T-34 tank, with emphasis on the tank. This T-34 tank that was able to break through the defenses deep into the German rear and push forward was a classic repeat of the tactics used by the Germans against their earlier and current adversaries. These German tactics now adapted by the Soviets would continue for the rest of the war. Although the Panther was

⁶² Guderian, Panzer Leader, 258-260.

introduced to the Soviets at the battle of Kursk in the summer of 1943, it was already too late for the Germans, for a new element, production, had been introduced into defining the tank along with firepower, mobility, armor and tactics. However, this discussion will focus on the question of what was considered the best tank of World War II, not excluding the production element and focusing on combat effectiveness when one tank was pitted against the other. The defining characteristics of armor, firepower, and mobility will not be the only criteria measured in respects to the Soviet T-34, German Panther V, and the United States M4A3 Sherman.

CHAPTER II

FIREPOWER

We will begin this discussion on the above three tanks' firepower. Their gun size, shell size, penetration of armor, and types of rounds will be compared and evaluated, allowing us to answer the fundamental question of which tank had the most effective and decisive firepower. The next characteristic to be discussed is that of mobility. The engines, transmission, fuel systems, and steering will be measured against its opponents with the objective of answering the question of which tank had the better mobility. The next characteristic to be discussed is that of armor. Again the objective will be to answer the question of which tank had the best armor against its opponent. The final and last discussion on the issues of characteristics will be those minor characteristics that enhanced the three tanks' performance such as sights, radios, tracks and night sights. The discussion will turn to the combat performance of each vehicle when pitted against the other combat vehicles from the three different countries. The tanks will be analyzed according to the number of tanks destroyed and the numbers engaged when pitted against each other. The three country's tanks will then be awarded and assigned a ratio number based on their kill ratio of its opponent's tanks. Speculation on the tank that would have been the superior if the number of tanks engaged were even throughout the war and based

on the kill ratios of its opponent's tank will be explored. This will be followed by the production figures of the three nation's tanks, culminating in the actual tank ratio of World War II. A final legacy of the tank will be submitted based on the lessons learned and achieved throughout this great mobile war.

The T-34 of Russia began World War II at an advantage with its main gun, the 76.2mm gun that overwhelmed the much smaller German tanks in service in 1941. The German's main tank gun was no larger than the 50mm, and had to depend on the massing of their tanks in order to defeat just one T-34, a tactic the Soviets would eventually employ against the Panther using the T-34s. When the Panther was introduced to the Soviets at the battle of Kursk in the summer of 1943, its main gun was an extended long barreled 75mm main gun. Although the German 75mm main tank gun was 1.2mm smaller in diameter than the Soviet 76.2mm, the German extension of the barrel helped produce a higher velocity that in effect produced more energy, resulting in a higher penetration of the opposing armor. Velocity is the energy needed to propel a projectile at a higher speed, thereby increasing its penetration power. The energy produced was determined by the velocity and speed of the tank round, depending on the size of the powder load that can be increased or decreased for combat situations. The T-34, Sherman, and Panther all used armor piercing rounds when fighting tank on tank battles, with the Germans using a cleaner, faster burning, smokeless powder that also increased the velocity of their main tank gun. The velocity of the "T-34/76 main tank gun used the armor piecing core rigid round that has a rating of 965 meters per second [2,172 ft/sec]."⁶³ While the Americans used the 75mm main tank gun like the Soviets, the American Sherman M-4A3 75mm gun "only produced a velocity of 690 meters per

⁶³ Tank Data, 137.

second [2,050 ft/sec] using the armor piercing core tank round.”⁶⁴ On the other hand, the “Panther produced a total of 1120 meters per second [3,066 ft/sec] with its main tank gun using the armor piercing composite rigid tungsten core tank round.”⁶⁵ These meters per second by the three opposing tanks’ main guns in combat varied slightly depending on the sources used in determining the m/s (meters per second). But all the data obtained from sources used for this discussion varied a only a few degrees, usually 20 m/s to 75 m/s, give or take. Two of the better sources used were Jarymowycz’s Tank Tactics and The United States Aberdeen Proving Grounds Tank Data on Armored Fighting Vehicles of World War II.

The above data clearly shows the velocity of the respected tanks’ guns, leaving no room for argument as to which tank had in effect the greater range and--depending on the type of projectile--the greater penetrating power. This leads to the next discussion on the above tank guns, and the type of round that was used to penetrate enemy armor. The four standard rounds used at the beginning of the war between Russia and Germany, and later the United States, were the armor piercing round, the early cluster (HE) high explosives type round used against troops, the smoke round, and the sabot round invented by the British to compensate for their lack of firepower of their tanks. The armor piercing rounds came in a number of varieties, depending on the adaptability of combat reports and the availability of the materials on hand. The two most common types of rounds used by Germany, Russia, Britain, and the United States are the armor piercing composite ballistic cap and the armor piercing composite rigid tungsten core. Essentially all sides throughout the war used both types of rounds. However, it was the tungsten core round

⁶⁴ Ibid, pg. 187.

⁶⁵ Ibid, pg. 59, and Hart, The Tanks Volume II, 98.

that had the greater penetrating power due in part to its harder inner core that bored through armor, while the ballistic cap produced a blast to penetrate armor. Tests revealed that the “tungsten core round used by the panther penetrated 174mm of armor at the what was than considered the normal combat range of 500m, 149mm at 1000m range, and 106mm of armor at 2000m at the optimal 30 degrees from vertical.”⁶⁶ Adding to the penetration of armor was the weight of the rounds projectile that was used by the respected countries tanks. The “projectile used by the Soviets 76.2 round weighed in at 14.3 lbs, while the Americans round weighed in at 14.4 lbs., and the Germans round weighed 15.0 lbs.”⁶⁷ The higher velocity, together with the greater weight and power of the German 75mm projectile, and the invention of the higher burning smokeless gun powder by Krupp, insured at the very least that the German tank rounds and projectiles would remain superior to those used by the Soviet T-34 and the United States Sherman for the foreseeable future. “Range, this was the determining factor and it exclusively favored the Germans.”⁶⁸ “We have been outgunned since Tunisia, when the Germans brought out their MK IV special with the long barreled 75mm gun.”⁶⁹ The Germans received both “MK III and IV specials with their new high velocity 50mm and 75mm guns respectively, they were excellent tanks.”⁷⁰ Not until the introduction of the sabot projectile round used by Great Britain would the superiority of the panther round loose its preeminence on the battlefield late in 1945, when the war had already been decided in favor of the allies. Meanwhile, as World War II continued unabated on the Soviet front, there was to be no question as to the superiority of the 75mm and 88mm projectile tank

⁶⁶ Parada, “Achtung Panzer,” pz4.

⁶⁷ Tank Data, 59, 137, 187.

⁶⁸ Jarymowycz, Tank Tactics, 266.

⁶⁹ *Ibid*, pg. 266.

⁷⁰ Mellenthin, Panzer Battles, 54.

rounds. The German tank 75mm and 88mm projectiles had cleaner powder, higher velocity, and better penetration at longer ranges—all facts that are undisputed even by most of the Panther's critics. Even later Panther critics had to concede that Germany possessed the better projectiles during World War II based on the “penetration tables and charts, and--more importantly--the combat experiences of Germany's enemies.”⁷¹

Germany's weakness was not the 75mm projectile round, or even the 88mm projectile round used in their Panther and Tiger tanks, it was the number of weapons platforms produced that was to be the determining factor. The above weakness was to be a reoccurring theme before and throughout World War II for Germany, one in which she would never gain the advantage. Not even during the invasion of Russia did Germany possess the advantage in numbers of tanks employed against the Soviets, let alone the later Panthers and Tigers that almost brought the Soviets to their knees. The Soviet advantage--of course--was from the very beginning of the German invasion of 1941, for the Soviets employed their formidable T-34 tank and its 76.2mm projectile round. The Red Army enjoyed the superiority of their T-34s from the moment they were engaged against German Army Group North in late June of 1941. Shortly after the German invasion, General Guderian, the foremost tank expert in Germany at the time, suggested a team of German tank producers copy this formidable Russian warhorse and use it against their enemies; for he could find very little wrong with the T-34.⁷² Hitler vetoed this idea on both military and political grounds, as he suggested that German soldiers might confuse their tanks with those of the enemy. He also pointed out that the Soviet *untermenschen* (sub-humans) could not possibly produce something superior to that of

⁷¹ Jarymowycz, *Tank Tactics*, 267, 269, 272, 277, 339, 341

⁷² Ripley, *Wehrmacht*, 278.

the exceptional German. Yet on the battlefield in 1941, there was irrefutable evidence that these “sub-humans” could indeed produce something superior to that of the German Aryan.

Only the intervention of tactics by enterprising young soldiers saved the day for the Germans by employing swarming tactics to overcome the T-34 with superior firepower from an all arms attack, a tactic the Soviets would later employ against the Panther and Tiger German tanks. Not until the battle of Kursk (according to Manstein and several other high ranking German generals) was the issue decided in favor of the Soviets winning the war in the east. At the battle of Kursk, the Soviets found it surprising that the introduction of the Panther played a very limited and ineffective role since abysmally (at the tactical level) the Panther had absolutely no known bearing on the outcome of the battle. However, the surprise was that this new tank (the Panther) could and did defeat the T-34 at ranges over 2000m using its new and very effective 75mm L-70 gun. Along with the Panther, the Tiger proved ineffective due in part to its engine, transmission and gas line difficulties, but fared better using its earlier design. Kursk is where the Soviet soldier developed the very wrong impression that all new German tanks were called Tigers, as mentioned earlier.

The United States Sherman, which was introduced in the African desert and Soviet steppes in 1942, had very different results entirely when pitted against the smaller German tanks because they were armed with 50mm guns. They were out gunned from the moment they went into battle. It was not until the invasion of Normandy did American Sherman's, with their 75mm guns, encounter the German Panthers with equally disastrous results as encountered elsewhere in World War II, for the Sherman's

75mm gun projectile was lightweight with a very low velocity in comparison to both its allies and enemies alike. Lacking the penetration power against the Panther, the Sherman was shot to pieces in the Bocage region of Normandy. Even the swarming tactic used by the Americans was not a sure thing when fighting the Panther and Tiger. General Bradley tried to explain the ineffectiveness of the Sherman by stating that since we (the Americans) had to build, transport, and invade a country across the Atlantic, we needed a lightweight tank that could be put ashore fast and in numbers, in order to exploit breakthroughs. General Bradley's additional reasoning was that we had already designed and built the landing craft on the specifications of the Sherman. If the above statement is indeed true, then it shows the utterly unimpressive planning and foresight by the Americans in tank warfare.⁷³ It was the British who would introduce an upgraded gun for the Sherman, so that it might stand in battle against the Panther; this new upgraded high velocity gun was the 17pd. This upgraded gun fitted on the Sherman chassis and the British changed its name to the Firefly. Still, the effect of this tank's gun on the battlefield had mixed results depending on the range, first shot ratio, and armor of the enemy.⁷⁴ The upgrading of the tanks' guns for all three countries continued for a long while (until the very end of the war in Germany's case, and to the present in the case of Russia and the United States.) One irrefutable fact is that the German Panther's 75mm gun dominated the Soviet T-34's 76.2mm, 85mm, and the American Sherman's 75mm gun on the battlefield both in range and penetration, according to the evidence.⁷⁵

Of course, another very important factor in determining the effectiveness of the three tanks' gun projectiles was the armor employed to defeat said penetration of the

⁷³ Jarymowycz, Tank Tactics, 321.

⁷⁴ Ibid, pgs 258-259.

⁷⁵ Jarymowycz, Tank Tactics, 258.

projectiles. The armor verses gun projectile round is of paramount interest; invention, innovation and necessity require and demand that one or the other supersede the other in order to win battles. Thus, the use and employment of armor will be discussed in the next chapter.

CHAPTER III

ARMOR

As stated earlier, when some bright enterprising young soldier from the past decided to protect himself from the use of the enemy's weapons, the race was on between firepower and protection. The introduction of metal was the turning point in that race. Metal, being the strongest alloy readily available, easily molded, and practical in relation to other harder substances, was to become the protection of choice for the belligerents of World War II, as opposed to the nineteenth century when the process of making those above metals became the new standard for the protection of the soldier in combat with the introduction of first iron, then cast iron steel.

It was the race for a harder material that led Sir Henry Bessemer to create what became known as the Bessemer process. Bessemer proceeded to "melt pig iron in an egg-shaped crucible, passing a blast of hot air through it, uniting the air's oxygen with the iron's carbon, leaving steel."⁷⁶ "Alfred Krupp, Germany's preeminent industrialist and iron maker seized upon Bessemer's gratuitous generosity through friends, when the latter provided the former with the license to the Bessemer process in order to produce steel

⁷⁶ Manchester, William, The Arms of Krupp, 1587-1968. (Toronto, Canada: Little, Brown and Company, 1968), 96.

within Germany.”⁷⁷ It was the above process (the invention of steel) that would lead to better protection for soldiers from piercing and dangerous firepower. However, with the invention of the tank in the early years of the twentieth century during World War I, steel plates (which were being used to build those tanks in World War I) became impractical due to cost and early victory by the allies. The full development of what would later become the dominant weapon on the battlefield (on a much wider scale) would both exponentially increase the cost and effectiveness of the chassis armor used by all sides.⁷⁸

Like Bessemer, Germany’s industrialist steel king, Krupp, had breakthroughs of his own. In “1875, Gilchrist Thomas invented what came to be known as the basic process for steelmaking, a process that eliminated Bessemer’s fatal enemy phosphorus by lining Bessemer’s kilns with limestone and dolomite which absorbed the phosphorus from pig iron and passed it off as slag.”⁷⁹ Even though Germany soon took the lead in the making of this new steel, the process soon spread all over Europe and the United States. This new hardened steel, along with the process of casting it into tank hulls in the large industrial workshops of Europe (beginning first in Britain and spread to the Soviet Union, France and Germany) led all previously mentioned countries to seek a new way of breaking the stalemate that existed during World War One’s trench warfare.⁸⁰

Due to the restrictions on Germany by the Versailles’s Treaty, most of Germany’s testing and building of this new instrument of war did in fact take place far from the watchful eyes of the Versailles committees entrusted with the treaty’s enforcement within Germany. Kazan, a city in the Soviet Union that was leased to the Germans became the

⁷⁷ Manchester, *Arms of Krupp*, 96.

⁷⁸ Ibid, pg. 144-145.

⁷⁹ Ibid, pg. 149.

⁸⁰ Guderian, *Panzer Leader*, 21-24.

training, testing, and building ground of the German tank. Other eyes, however, *did* pay attention to this German innovation in the art of war--those eyes belonging to the same Soviets the Germans would face during World War II. This program of testing by the Germans in the Soviet Union created the collusion of two very different approaches to the use of the tank. The Germans during the 1920's-30's applied testing to their tanks based on the concept of speed and maneuverability, while the Soviets focused more on the traditional practicability of balance of fire power, armor, and speed. Other very important--and often overlooked aspects of the above collusion--is that the Soviet Union had (from the beginning) the facilities, blueprints, plans, backing, and concepts that were far more advanced compared Germany's. Also, the USSR possessed the foresight to implement all of the above on a far larger scale than the Germans due to the above-mentioned restriction. From the beginning of their struggle for dominance, Soviet factories could out produce those of Germany. The Germans on the other hand, started production on a very limited scale prior to 1933, mostly on artillery and guns since the debate about producing tanks within Germany was still in its infancy. The two very different approaches to building the tank by the Soviets and Germans would be extremely evident in the coming battles, for the latter would pin their hopes on speed of attack, while the first would depend on their practical technology and create a far better balance of speed, armor, and guns for their tank. This lack of foresight and attention to detail on production within Germany was to have grave effects during the Soviet invasion by the Germans in June 1941.

Steel plates were to be the order of the day in the early tank models during and just after World War I, lasting until the mid 1930s with the innovation of the cast iron

hardened steel chassis. This new steel chassis would vary in size and depth of steel on the different areas of the tank depending on the horsepower needed to move the total overall tank when completed. Another factor was that of the size and velocity of the projectile being used against said armor. The old argument of gun verses protection would come to depend on the technology of the belligerents and which one could in effect focus their attention on a balance without losing the effects the tank needed to accomplish its mission. The Germans were to learn the lesson of balance in the summer of 1941.

The Soviet Union, which had the T-34 and 1.8inch armor from the onset of Germany's invasion, fielded a better tank to that of Germany that was to last for months. Only by applying steel plates to their Panzer III's and IV's did Germany hope to limit the effect of the T-34. The T-34's 76.2mm gun could (even with the addition of the steel plates used by the German Panzers) penetrate and--at the very least--disable German tanks. At this point in time, during the summer of 1941, the Germans used their swarming tactics with combined arms firepower to overcome the superiority of the T-34. This meeting of the armored forces between the Germans and Soviets would play a decisive role in the production for both countries. The Germans, who returned to the drawing board in order to create a tank that could counter the T-34, wasted precious time planning and reallocating resources (both in manpower and materials, which were in short supply). Meanwhile, the Soviet response was to continue with the full production of their practical battle tested tank, albeit with modifications, and to upgrade its gun and projectile due to Germany's Tiger and Panther production. A small arms race among armor resulted, with the USSR winning that race based on resource allocation and production. Germany's dilemma centered on how they could destroy more T-34's than the Soviets could

produce, thereby limiting the enemy's success against their army. Again, Germany's short-sighted planning, together with Hitler's intervention, created an impossible situation for Germany and for the production of their armored arm, for Hitler even flirted with the idea of creating tanks weighing in at well over 100 tons, according to Guderian in his book Panzer Leader. As stated earlier, armor was also limited in the tank due to its weight, for the technology in the field of motorization had to keep pace with that of the vehicle it was moving.⁸¹ Although swarming tactics were a most important factor in determining the outcome of a battle, the quality of the tank mattered because most tank engagements on the eastern front was on a five to one ratio in favor of the Soviets.⁸² In spite of this, the superior nature of the Panther allowed it to fare a chance at parody with the T-34's numerical advantage.

The "T-34 weighed in at approximately 32 tons, while the German Panther weighed in at 50.2 tons, and the American Sherman that arrived late on the scene weighed in at 36.2 tons."⁸³ The Sherman's gas powered "Chrysler engine created 430 horsepower, the Russian T-34 diesel engine created 500 horsepower, and the Panther created 700 horsepower," as seen by the above tables, two facts stand out.⁸⁴ The first fact is that the fuel used by the different countries was crucial. The United States' use of gasoline led directly to the Sherman's increased power on moving armor, and showed the better weight to power ratio of fourteen horsepower to the T-34 and Panther. The second fact is that the weight to power ratio is fourteen horsepower per ton of movement for the Panther, while that of the T-34 is thirteen horsepower per ton, showing that the weight to

⁸¹ Ripley, Wehrmacht, 320.

⁸² Parada, "Achtung Panzer," pz4.

⁸³ Tank Data, 61, 137, 187.

⁸⁴ *Ibid*, pg. 61, 137, 187.

power ratio favored the Panther against the T-34, and equaled that of the Sherman. The drawback for the Sherman that has already been mentioned is the limited protected gas compartment leading directly to the explosiveness of its fuel.

The armor of all three tanks was cast hardened steel in varying degrees of inches and/or millimeters, depending on the version used of its calibration method for measuring the tank hull's thickness in the industry of a particular country's origin . The USSR and Germany used the metric system that is still popular in Europe, while the United States used the standard system that was (and is still) popular. As we have already seen, the Panther far surpassed both the T-34 and Sherman in hull and turret thickness. "Panthers should easily rout any U.S. force before it could get close enough to defeat Krupp steel."⁸⁵ The extra weight of the Panther is attributed to the vehicle's frontal armor, both chassis, turret, and its size. While all three tanks had approximately the same thickness for its sides, the Panther clearly had the edge with its turret front at 4.3in. In head-on clashes, which the Germans excelled at when attacking straight on or in the flanks, the Germans clearly had the advantage in armor.⁸⁶

The limiting factor as mentioned above was the Panther's sheer size. With a "length of 22.6ft, height of 9.7ft and width of 11.2ft, the Panther G model was actually larger in width and length than the Tiger VI produced by the Germans," creating for their enemies a huge target.⁸⁷ In comparison, both the T-34 and Sherman were shorter in height than the Panther by at least a foot and a half for the former and half a foot for the

⁸⁵ Jarymowycz, Tank Tactics, 31.

⁸⁶ Ibid, pg. 131, and Ripley, Wehrmacht, 40, 41.

⁸⁷ Tank Data, 61, 57.

latter, providing smaller targets for all tank forces and anti-tank forces for the German Army.⁸⁸

So the question of armor in relation to size of target must be addressed before continuing on the comparative value of armor within the three protagonists. According to most German tank gunners of the Panthers, Tigers, and the anti-tank and aircraft 88 gunner's, the T-34 and Sherman could be engaged at a distance of 2000m before either could close with the Germans in order to defend themselves effectively. The books Tank Tactics, Panzer Battles, and Panzer Operations all vindicate the above sentence, justifying their claims on occasions too numerous to mention. After all, if they (the tanks) can be seen, they can be shot. The only weakness the “early Panther models D, A, and G had in frontal engagements was its mantlet that could not be penetrated, but deflected the enemy shot downward into the thin armor above the driver.”⁸⁹ The upside to the mantlet was the Panther's overall thickness and protection of its crew. Since the “most consistently reported complaint was allied armor, the Sherman was constantly penetrated, while Panther's armor defeated most allied guns.”⁹⁰ The Panther's down side was “the engineering simplicity of the Soviet T-34 that placed it behind the Panther in overall performance, but proved the more reliable machine due to its simple maintenance and ability to be maintained by any Kulak, while the Panther required specialist.”⁹¹

To be fair to all the combatants, all countries engaged in tank combat added steel plate armor to their sides and rear in order to facilitate the protection of their equipment and crews. Another factor that must be considered is the sloping of the armor on the

⁸⁸ Ibid, pg. 59, 137, 185.

⁸⁹ Jarymowycz, Tank Tactics, 273.

⁹⁰ Ibid, pg. 275.

⁹¹ Ibid, pg. 276.

tanks. The Soviets were the first to have it, since their T-34 had sloping armor from the onset of hostilities. The United States had, at this point, not joined in the fight yet, while the Germans went back to the drawing board, and even flirted with the idea of copying the T-34, according to Guderian. The sloping of armor helped the tank by deflecting the shot away from its direct line of fire, either up or down adding more thickness to the armor the projectile had to penetrate. The T-34 had 60-degree deflection, the Sherman had 46-degree deflection, and the German Panzer had 55-degree deflection, clearly showing that the T-34 had the advantage in frontal engagements. The T-34 had this advantage and maintained it throughout the war. It wasn't until late 1943 and early 1942 that the Panther and Sherman made their debut in combat, with the former appearing at the battle of Kursk, the latter in the USSR, and still later in Sicily.

We have seen that the Panther clearly had the thicker frontal armor in its hull and turret with respects to the T-34 and Sherman, with all three tanks being equal more or less on the sides, and all tanks having the sloping armor advantage. Without any country adding additional steel plates to their tanks, it could be argued that the T-34 and Panther nullified each other, as one had thickness, the other, sloping armor. While in the race for superiority in this instance, the Sherman comes in a dismal last place with its thinner, less sloped armor. Despite all the above, it must be remembered that the German Panther's 75mm projectile had a penetrating power of over three inches of armor, while the T-34 and Sherman did not.⁹²

⁹² Jarymowycz, Tank Tactics, 273-278.

CHAPTER IV

MOBILITY

The third leg of the armor triangle is of course, mobility. Mobility includes more than the ability to move, as it includes tactics usually at the small unit level. The battalion is usually considered the smallest unit in combat situations (although some prefer to use the division for larger combat situations) that practices tactics on a day-to-day, hour-by-hour basis and--in emergency situations--reacts and counteracts immediately. These tactics refer to the analysis of the combat situation, the mission to be performed, the execution of the mission and how it is to be performed, along with administration, logistics, command, and control at the small unit level. The above sentence in military jargon is known as the five-paragraph operations order and affects all soldiers no matter the type of mobility involved. This discussion will only focus on the topic of the three tanks from the United States, USSR, and Germany, as to keep with the pattern and purpose of the argument, and will take into consideration the engines, transmissions, gear boxes, tracks, fuel lines, and everything else that helps the tank propel itself into battle, all while keeping in mind that tactics often had an imposing influence on when, where, and how these tanks went into combat. The tactics of the fourth and fifth paragraph of the operations order will be mentioned only in this chapter to explain the motorization

component, and to further explain the way which tanks operated and the reasons for the limitations. The first part of the tank's mobility is the motor and all its internal components that make up the mechanical aspect in order to propel the vehicle itself. The first three paragraphs of the operations order will be discussed later in chapters five and six while expanding on the plan of action in relation to the bigger strategic situation.

A brief history and invention of the engine along with the process on how it came to be used in warfare has already been mentioned to a certain degree. This chapter will focus on the specifics of the T-34, Panther, and Sherman's mechanical components, along with the extras that went along with those components, such as radios that were used for communications, gun sights, suspension, and the logistical support for keeping the vehicles running in good order and keeping them on track to carry out their combat mission.

The Soviet's built and produced the "T-34 with a twelve cylinder four cycle diesel with a five hundred horse power liquid cooled engine."⁹³ Its "transmission had four speeds forward and one for reverse, while its suspension used the Christie suspension that was imported from the United States."⁹⁴ The Panther engine also consisted of a "twelve cylinder HL 210 P45 Maybach 700 horsepower (petrol) diesel liquid-cooled propulsion system, and utilized a synchromesh transmission with seven forward speeds and one reverse."⁹⁵ While the "United States Sherman implemented the five engine, Chrysler type 5-251 liquid cooled gasoline six-cylinder per engine concept that produced 430 horsepower and a transmission that had five forward speeds and one reverse speed."⁹⁶

⁹³ Tank Data, 137.

⁹⁴ *Ibid*, pg. 137.

⁹⁵ *Ibid*, pg. 59.

⁹⁶ *Ibid*, pg. 187.

Although the types of engines in the above tanks are very different as are the tanks themselves, and the horsepower to weight ratio has already been mentioned, the Panthers twenty-nine mph, T-34s thirty-three mph and the Sherman's twenty-five mph varied very little in speed, according to the book Tank Data on pages 59,137, and 185 through 187.

One fact that stands out when reviewing the specifications in Tank Data is that the operation radius of the T-34 surpassed that of the Panther and Sherman by over one hundred and fifty miles in the case of the Panther, and one-hundred-eighty miles for the Sherman. This would help explain why the Soviets were able to exploit the deep penetrations without the necessary logistical support that most modern armies at the time needed. This particular tactic, although very effective, did in fact present its own set of problems for the Soviets. Without the support of the infantry, the leading Soviet armor could be cut off and destroyed piecemeal by the Germans. Another factor was the lack of initiative shown by the Soviet's middle commanders once the deep penetration occurred, as well as the lack of directives (radio communications) by higher command authorities who could never keep pace with their fast moving armor units; it was a problem that was to persist almost to the end of the war.⁹⁷

The Sherman and Panther (when entering the war) both came to the battlefield with their radio communications intact. The Germans had the advantage over both the Soviet and Americans in armor warfare in this aspect since the Germans had excellent radios even at the beginning of the war. The Soviets, on the other hand, added radios late in 1941 but only in the commander's tanks to—in their minds--better control the battle; this was done for political reasons, for the “Soviets frowned on initiative and demanded that the forces under their command adhere unconditionally to the battle plan, so that they

⁹⁷ Glantz, Colossus Reborn, 248.

could control every aspect of the battle without any unknown consequences to the command.”⁹⁸

The Germans had the edge in signal communications and command control in almost every instance on the eastern front when battling the Soviets due to the Panthers all having radios, which in turn, enabled the German commander to move even a single tank unit. The Germans also used mobility, flank attacks, encirclements, envelopments, and all arms combat firepower to stem the flow of the massive armor formations employed by the Soviets. However, as the war dragged on and turned against Germany, “Hitler imposed directives on his commanders that limited their ability to maneuver and wasted the combat effectiveness (firepower and maneuverability) of his military, while mobility of the Soviets increased with the experience gained in combat.”⁹⁹

The Americans had, from the very beginning, the best logistical support in the world. From the invasion of North Africa to Sicily, and finally, to Normandy, the Sherman was supported by the overwhelming force of the United States Army Air Corp, full T.O.E. (table of organization and equipment) infantry divisions and massive amounts of artillery units. The Sherman also contained individual tank radios and could operate as directed by commanders as individual units if the need arose. Like the Panther, the Sherman enjoyed superior signal and commands due to their radio communications that enabled the subordinate tank units to react immediately to the objectives set in the tactical plan, or fluid situation on the battlefield. “The T-34 lacked the ability of the individual

⁹⁸ Ibid, pg. 248-249.

⁹⁹ Mellenthin, Panzer Battles, 322, 359.

tank units to communicate except from the attacking commander, who used flags and light signals, which lacked clarity.”¹⁰⁰

The logistical and administrative paragraph for combat operations for the Germans and Soviets differed from the standpoint of traditional and innovation supply systems. The Soviets traditionally built up huge stockpiles for the attacks that they carried out from 1943 onwards, and then attacked until logistics brought a halt to their operations; they repeated this process over and over again. The Germans had to economize their supply system at the beginning of 1942 due to losses through attrition, using counter thrusts and local offensives to disrupt and halt large scale Soviet attacks. Due to the bombing of Germany’s infrastructure (industrial plants and fuel production plants), the use of airborne supply for German pockets that were surrounded and creating alarm units that could respond in emergencies increased much more frequently after the battle of Kursk. It could be argued that the Germans enjoyed the benefit of shorter interior lines of supply, but it was a supply that was interdicted more and more as the British and American air campaign grew in its intensity. The Americans had enjoyed complete and total supply logistics in Normandy, with the exception of fuel. The campaigns in France were the only exceptions to the rule, where the fuel pipeline (Pluto) was not yet completed in July 1944, and the lack of petroleum during operation Market Garden in September 1944, stalled the Allies’ advance. The Americans responded with the capture of Cherbourg and instituted the Red Ball Express. Cherbourg was a major port that would accommodate large ships for the off loading of major supplies. The Red Ball Express consisted of truck drivers that delivered large quantities of fuel and ammo directly to the front line troops in a circuit twenty-four hours a day, seven days a week.

¹⁰⁰ Glantz, Colossus Reborn, 248-249.

The Allied air campaign also contributed to another much greater threat to the German ground forces, and that was the fighter-bomber attacks on the Panzers. The German Panther, Soviet T-34, and American Sherman all could not withstand the attack from the other country's air forces, for their "armor could not withstand the armor piercing, high velocity projectiles, and rockets employed from the air."¹⁰¹

Even the mighty Panthers and Tigers armor could not protect them from the allied fighter bombers, as the armor was just not thick enough, and could not be produced thick enough to insure effective mobility. The problem of armor and armor plating created (for the axis and allies alike) a paradoxical problem between firepower and armor, for when firepower defeated the armor of one or the other country's tanks, the defeated country's industrialist would respond by creating armor that would defeat the firepower of the country that defeated its first armor. Thus a vicious circle of production ensued that would continue into the present. However, one thing will be made clear in the following chapters, and that is that the Panther in head to head battles with both the T-34 and Sherman tank more often than not came out the victor in part because of the thickness of its armor and partly because of its 75mm L-70 gun.

¹⁰¹ Jarymowycz, Tank Tactics, 269.

CHAPTER V

OPERATIONS

The following two chapters will be devoted to the first three paragraphs of the operation order (today's army field manual, but the principal is the same) and how it pertained to combat operations using armored forces and specifically those of the Panther, T-34, and Sherman tanks. Most operation orders, depending on the time and information available, will contain a clear and concise order (plan) for subordinate units in an area of operation. This order is the unit leaders' plan of action and gives subordinates a clear direction and objective to accomplish. The Germans used two types of operation orders; "*befehlstaktik*" (order-directed tactics used by higher head-quarters) and "*auftragstaktik*" (mission-directed order used by the junior level officers and N.C.O.s that provides greater freedom and independence)."¹⁰²

The situation (in an area of operations) is the first paragraph in the operation order and contains as much detailed information as possible on both enemy and friendly forces. Three subparagraphs include enemy forces, friendly forces, and attached units. Enemy forces is broken down using the acronym S.A.L.U.T.E. (modern use), which stands for size of the enemy, activity of the enemy, location of the enemy, enemy units to be engaged if known, time enemy observed, and equipment enemy possesses. The friendly

¹⁰² Jarymowycz, Tank Tactics, 84.

paragraph contains information on the flanking and higher unit's mission in relation to that of the subunit. The last subparagraph, labeled attachments, informs the unit of the support that they count on during their mission, such as engineers, medical, and artillery support.

The second paragraph in the operation order is the actual mission to be performed by the unit, and contains information on who, what, when, where, and why of the order. This is the most important part of the operation order. Since time may influence a unit's preparedness, a unit must be able to accomplish a given mission on short notice, leaving to the unit's leader discretion in carrying out his mission. This was to be German soldiers' greatest asset in the years 1939-1942, and also when dealing with the Soviet and American great offensives of 1943-1945. This paragraph shall also highlight the fighting spirit de corp and initiative that was prevalent in the Non-Commissioned Officer Corp (small sub-units) of the German Army. The Soviets, as already mentioned, focused on the "larger unit mission, usually at the corp, army, group, and front level, the strategic level (the overall bigger concept of tactics)." ¹⁰³

The third paragraph is that of execution. This contains the information on how the mission is to be carried out, either by the plan of the unit's immediate leader, or the plan of the higher headquarters. The following three subparagraphs contain first, the units maneuver from start to finish (attack plan) and fire support plan. The second contains specific missions of the unit's sub-units, while the third subparagraph contains the line of departure and checkpoints and coordination instructions from adjutant units. This particular paragraph rarely applied to the Soviet military for two reasons. The first reason already mentioned is that the Soviets very seldom trusted their subordinates to carry out

¹⁰³ Jarymowycz, Tank Tactics, 287.

their mission without threat of force, as the lack of initiative shown by the typical Soviet soldier without clear objectives (lack of communications) was paramount during the battles on the eastern front. The second reason is to be found in the training of the Soviet soldier. According to David Glantz in his book Colossus Reborn, “most Soviet soldiers were conscripted and impressed into service with the bare rudiments of rifle training.”¹⁰⁴ The “militia type recruitment and numerous ethnicities created for Stalin a cadre-system largely untrained, and excessive turbulence caused by the Red Army’s rapid expansion inhibited the training of the new soldiers; in short, its subsequent combat performance indicated, even though the Red Army could mobilize a vast force of fourteen million partially trained reservists and conscripts, on 22 June 1941, the Red Army was a colossal force with clay feet.”¹⁰⁵

In June 1941, the German Army faced an opposing Soviet force of not less than twenty- three-thousand tanks less than a month after the commencement of Operation Barbarossa. “The Germans had destroyed over ten-thousand Soviet tanks with less than three-thousand inferior Panzer I, II, and III tanks.”¹⁰⁶ In “January 1944, the Germans in Army Group North Ukraine faced 67 rifle formations and 52 tank formations of the Russian army.”¹⁰⁷ These examples are given for three reasons. The first reason is to show that the Germans grossly underestimated the Soviet Union’s tank force and their capability to produce them. Secondly, it shows that the Germans were outnumbered by Russia from the very start of the war and remained that way in the tank battles after three and half years of war. The third reason shows that the Germans never gained parity in the

¹⁰⁴ Glantz, Colossus Reborn, 536-537.

¹⁰⁵ Ibid, pg. 538.

¹⁰⁶ Ibid, pg. 217.

¹⁰⁷ Guderian, Panzer Leader, 327.

field or in production of the tank forces employed by the Soviets. This brings up the first paragraph of the operation order--the situation of the enemy forces. The Germans began to realize in December 1941 (with some German generals realizing even prior to that date) that the Soviet battle formations had vast amounts of men, material, tanks, space, and had generally been underestimated from the very start of the invasion. The Germans responded using tactics of all arms combat formations to deal effectively with the Soviet tank forces, but understood from 1942 until the end of the war when planning either for the offense or defense, that they (the Germans) would always be outnumbered and planned accordingly at the local level. The higher strategic planning was left to Hitler and OKW; "Hitler's planning on many occasions stripped panzer units from the all arms combat formations that were needed to effectively counterthrust the Soviet attacks."¹⁰⁸

As the war dragged on, the Germans changed their tactics by using panzer formations as stop gaps and counterattacked the Soviets using their superior mobility after the Soviets spent their initial attack. This tactic was very effective when used by Manstein in the Ukraine to halt the Soviet attacks late in 1943 and early 1944. The mission of the panzer units changed as the war turned against Germany. Beginning with the invasion of Russia, the tanks rushed forward in attack and encirclements. After the battle of Kursk in July 1943, the Panzers were used at the local level as stop gaps and local counterattacks. Late in 1944, the Panzers were controlled at the strategic level by Hitler in futile attacks, and given assignments that were unrealistic and not achievable due in part to the overwhelming superiority in numbers of the Soviet tank formations. Even with the introduction of the German Panther in numbers that were respectable to fight the Soviets in many cases to a stalemate, the Panthers fought at a disadvantage in

¹⁰⁸ Guderian, Panzer Leader, 310.

battles of five and sometimes fifteen to one. However, when the German tank formations did attack, in most cases they achieved their goals due to superior firepower and mobility, even if temporary. It could be said that once the German soldier was set in motion (and this includes his Panzer formations), he adhered unconditionally to the execution of his mission and used innovation and improvisation to overcome obstacles in his way. The Soviets, when attacking, also adhered to their mission in most cases, but how they executed their mission was flawed, for they notoriously lacked the planning in communications and commanders initiative at the local and tactical level. This negligence and lack of planning on the Soviets part was paid for in Russian blood and equipment due to the lack of training in tactics, as will be seen later when discussing the combat situations on the eastern front.

Where the Soviets did excel, though, was in the overall picture, or strategic planning, for they believed that casualties (to a certain degree) were unimportant. In their eyes, as long as the end results justified their actions, their plan was to continue to attack relentlessly. The quick massive build-up of Soviet tank and rifle formations and the lack of time and formal combat tactical training given middle commanders was the paramount reason for the poor employment, misuse, and waste of large tank formations in combat with the Germans.¹⁰⁹

To sum up the operation order as applied by the German Army and its relationship to that of the Soviet Army, one may state that the Soviet Army played the role of defense from the beginning of operation Barbarossa in 1941 and used mostly ad hoc formations in the first few months of the invasion to try and maintain echelon defenses that could at the very least slow the German juggernaut. The German strategic

¹⁰⁹ Glantz, Colossus Reborn, 248, 620.

plan initially maintained its overall ability to destroy the Soviet military forces; but constant intervention by Hitler forced the Germans to reassess their primary goal of destroying the enemy's combat formations on the field, for that of political and economic reasons. At the tactical level, the Germans excelled in their planning of combat operations by first adhering to their plan, and overcoming setbacks through innovation. When the German army in the north encountered the first T-34 tank of the Soviet army, the Germans adapted to the situation by using swarm (everything on hand, using all arms combat firepower) tactics, which is a clear example of their innovation, according to Guderien. The German army's mission was to destroy the Soviet military as quick as possible, and they executed their plan flawlessly. This is apparent due to the sheer numbers of prisoners taken, equipment captured or destroyed, and land occupied by the German Army. The constantly- attacking Germans forced the defending Soviets to react instead of act, which led to the Germans being able to "destroy 10,000 out of the purported 23,000 Soviet armored vehicles in the first six months of the invasion."¹¹⁰ "The German military utterly savaged the Red Army's mobile forces during the first four weeks of the war."¹¹¹

The Soviet military also had disbanded its tank corps, armies, and their "tank operation theories a few months before the war with Germany and adapted the more conventional theory of using tanks for support and defense in echelon."¹¹² Another reason for the lack of training and combat readiness of its middle and upper commanders was Stalin's purges of his most experienced and educated commanders. Those commanders were also the ones that had implemented the deep penetration theories that the Soviets

¹¹⁰ Glantz, *Colossus Reborn*, 217.

¹¹¹ *Ibid*, pg. 242.

¹¹² *Ibid*, pg. 216.

would reinstitute later in the war. Those purges had left young, untrained, middle commanders to fight the Germans while trying to reconstitute their cadre schools, and train students to the same degree as before the purges. So, how does the training and planning fit into the operation order plan? The primary weapon of choice for the German were the well trained panzer forces, while the Soviets tried to stem the flow of German aggression with infantry and tanks that were not concentrated. With the initial German invasion, the Soviets were at a disadvantage trying to react as opposed to planning for the attack. The lack of training of the fighting Soviet soldier both at the middle officer and specialist level made for a very frustrating and demanding situation. The chaotic, unstable, and unprepared Soviet military could be due in part to the lack of foresight and planning, even the planning for their subordinate soldiers. The Germans on the other hand encouraged aggressiveness, innovation, and initiative down to the lowest private. However, as the war progressed, the German initiative would be controlled by Hitler at the upper echelon of command, but would be retained at the tactical level of command, usually at the corps or division level for the Germans. The operation plan, no matter how detailed, must incorporate personnel that can understand and implement it according to their commander's wishes. According to Glantz, the Soviet mechanized corps, "despite their strength on paper...lacked requisite logistical support, adequately trained personnel and most tank drivers had received minimal if any training."¹¹³ On the other hand the Germans, according to Kleist, "depended on the superior training and the skill of our troops."¹¹⁴ The Americans had General Patton and General Wood, both masters of maneuver, with "Liddell Hart calling General Wood the Rommel of the American

¹¹³ Glantz, Colossus Reborn, 242.

¹¹⁴ Hart, Generals Talk, 175.

forces.”¹¹⁵ What the above statements suggest is that all three of the combatants in World War II, especially their armored personnel, were the elite offensive unit that provided the breakthroughs in varying degrees. The German planning was clearly superior from the moment they engaged in combat, with the Soviets following close behind due only to their learning curve and experience in combat, while the Americans, once onshore in Normandy, closed the gap fast in planning, but lacked the equipment to implement their plans. This superior planning of the Germans allowed them to defend against the Soviet advantage in numbers. General Heinrici of the Soviet Army once stated that “for success, the attacker needs six to one or seven to one against a well-knit defense force; there were times when my troops held their own against odds of 12 to 1 or even 18 to 1.”¹¹⁶ Thus, the importance of a well-knit plan can in fact be a force multiplier, and when that force possesses the superior equipment, the only conclusion that can be drawn at the very least is that a stalemate will ensue, while at the most it doubles the multiplier even against an elite force, such as an armored one.

¹¹⁵ Jarymowycz, Tank Tactics, 232.

¹¹⁶ Hart, Generals Talk, 216.

CHAPTER VI

OPERATIONAL STRENGTHS AND WEAKNESSES

In the tank battles of the eastern front between Germany and the USSR, the elite tank forces employed were of a decisive nature for both combatants. After Stalingrad, the Germans used their dwindling panzer forces in a more limited roll, first for limited offenses, then as reserves for stopgaps against the onslaught of numerical Soviet tank forces. The Soviets used their tank forces as the elite shock element to breakthrough and penetrate the enemy line, while exploiting the enemy's numerical inferiority at several different points. The latter tactic of the Soviets, of course, brings the battle to the strategic army level where the Soviets were much better suited in their operations given their numerical superiority and as experience was gained as the war dragged on. Time, as we shall see, was another dynamic that was against Germany.

The strengths of the elite German panzer forces was their excellent planning and undisputed superior equipment, the training of their panzer soldiers, and the Panther, Tiger, and Mark IV tanks that were the building blocks of their Panzer force. The weaknesses of the German panzer forces were its logistics--a shortage in most raw materials and resources for the building of those blocks so essential to the panzer force, including non-renewable resources like petrol, both natural and synthetic. After the

German panzer losses suffered during combat, and the strategic bombing of the Allies on German industry, it became crystal clear that Germany was indeed fighting a losing war against time. Thus one can indeed recognize the need for the Germans to use innovation, improvisation, and dependence on what they believed was the decisive weapon--the almighty tank.¹¹⁷ Hence, Hitler appointed General Guderian as Inspector General of Armored Troops to redress the economic situation in the panzer formations.

As discussed earlier, the building of the Panther in 1943 was in direct response to the Soviet T-34. The Panther and all the resources it demanded including man-hours was yet another liability for the Germans. The Germans resorted to employing unskilled foreign workers to build the most technologically advanced tank of the war, for Germans were needed to fill the losses that occurred at the front. The above problem created by the skilled labor shortage demanded time in training these new (willing and unwilling) recruits. This vicious, yet seemingly inevitable circle would continue for Germany until the end of World War II.

Between “1943 and 1945, the production of the German Panther never exceeded six-thousand, one-hundred, and seventy five vehicles for combat for all fronts.”¹¹⁸ This small force of Panthers, along with its all arms combat panzer force as we shall see, not only held its own in combat, but “destroyed enemy forces three and sometimes ten times its own strength, as stated earlier by General Heinrici.”¹¹⁹

The strengths of the Soviet tank forces (in particular the T-34) were that they were already employed from the start of “Operation Barbarossa” with formidable firepower and mobility. The twenty-three thousand armored fighting vehicles of the Soviets were the

¹¹⁷ Guderian, *Panzer Leader*, 284-285.

¹¹⁸ Parada, “Achtung Panzer,” pz4.

¹¹⁹ Hart, *Generals Talk*, 216.

backbone of the Soviet forces, or so they thought. Like so many other tank forces and armored forces of the time, the Soviets did in fact possess the numerical strength to repel most, if not all, invasions from what they believed to be a war of attrition. What the Soviets did not count on was the superior training, planning, and all arms firepower that the Germans brought to the fight.¹²⁰

The weakness of the Soviet T-34 was the way in which it dispersed for combat. The Soviets used their T-34 as infantry support and not as formable groupings to oppose the masses of the enemy tanks, which brought to bear whole corps and divisions against widely dispersed Soviet infantry forces supported by the few scattered armored forces of the Soviet T-34s. Lacking the communications of the German armored forces was another weakness. Adding to this was the lack of planning and operational mobility of the Soviet forces that provided the direction of the initial battles between 1941- 1942. Also, the inability of the majority of the Soviet tank forces to train for this new type of warfare was a disadvantage, as was their tanks' ineptness to go into combat against first rate troops, for their T-34s were not bore-sighted (sighted for the pin-point destruction of the enemy).¹²¹

The numerous amounts of American Sherman tanks produced for both the Americans and their allies, the Soviets and the British, was one of its greatest strengths. The Sherman was also easy to work on, as parts could be easily attained, with superb communications in almost all armored tanks. Also, the logistics afforded to the Americans insured an uninterrupted supply of machines available for combat for years, due in part to their industrial capacity and available resources. The greatest strength of

¹²⁰ Ripley, Wehrmacht, 167.

¹²¹ Glantz, Colossus Reborn, 216-244, 466-473.

the American Sherman, however, was its ability to be shipped in large quantities across the Atlantic Ocean for the pre-invasion preparations of the European continent.

The major weakness of the United States Sherman was that it had never seen combat when used by the American soldier prior to “Operation Torch”. Its under-powered firepower became immediately apparent immediately when used by the British in the African campaign, while the Americans maintained that the British exaggerated the Sherman’s opponents. It was not until after the invasion at Normandy did the “Americans learn--much to their horror--that the German Panther and Tiger possessed superior firepower on the terrain known as the bocage, located in France.”¹²² Another equally disturbing factor was the training and planning the American authorities implemented prior to the Normandy invasion, for the American military command was *still*--at such a late date-- debating the tank verses anti-tank gun and the role each would play. It soon became apparent to the Americans through the practical application of both in combat that the tank would indeed become the paramount weapon of choice. No matter the weakness of the armor, no matter the lack of firepower, and no matter the lack of training and mobility, the United States Sherman had the initiative, innovation, and aggressiveness of its individual soldiers. Notwithstanding, the major strength of the Sherman was that they came in a never-ending supply for the sole purpose of disposing of and destroying the German way of life.

The American training and planning doctrine for armored warfare was dominated by General McNair and the old school of traditional thinkers; albeit, McNair was the one man most responsible for the Americans poor performance in battle using the Sherman, for he was more concerned with pushing his own doctrine and philosophy of warfare.

¹²² Jarymowycz, Tank Tactics, 257.

With “flawed data, and in some cases no data gained in the battles of North Africa using the Sherman against Tigers, and the Italian battles of Sicily, General McNair concluded that there was no need to build heavier, or upgraded battle tanks and put the United States heavy tank program on the back burner.”¹²³ The Americans indeed destroyed Tiger tanks in both of the above campaigns, but in favorable conditions for the Sherman. Such “conditions as side shoots, and rear shoots to the weakest area of the Tigers, also the intervention of airpower and artillery by the allies that destroyed German panzers, but was attributed to American Sherman’s; this led to the above flawed conclusions about the German armored force that they would face in Normandy, for if the Tiger could be destroyed, then the Panther could also be destroyed.”¹²⁴ To make matters worse, after the “capture of Panther tanks in the battles for France, the experts learned that no American Sherman could penetrate the frontal armor of a Panther no matter what the range was.”¹²⁵ The above scenario became known as the “Great Tank Scandal in American armored forces.”¹²⁶ These tank scandals led the British allies to improve upon the Sherman by providing it with an up-gunned seventeen pounder gun. Impressively enough, the seventeen pounder gun could penetrate the frontal armor of the Panther sometimes, and usually at or under 750 meters, according to Jarymowycz in Tank Tactics. These new allied tanks would carry the designation Firefly, and as long as the allies could engage the Panthers on a five to one basis, there was a better than even chance that the Firefly and its support would come out victorious against the Panther. Once the Americans got over their initial shock of the Panthers and Tigers and began to train their armored force in

¹²³ Ibid, pg. 257.

¹²⁴ Jarymowycz, Tank Tactics, 256.

¹²⁵ Ibid, pg. 257-258.

¹²⁶ Ibid, pg. 255.

swarming tactics, along with ambush tactics and the much needed help of the elements (fog), they began to give a good account of themselves against the Germans.¹²⁷

The Americans, Soviets, and Germans planned almost all their battles after 1943 with the tank as the leading proponent in those battles. The Germans used operational mobility at the army and corps level for the destruction of enemy forces through encirclement and envelopment with their armored forces, while the Soviets used deep penetration methods at the army, group, and front level to destroy an entire defensive structure of the German army front for several hundred miles using their armored forces. The Americans, still new to tank battles after their Normandy landings used battalions, combat commands (half armored divisions) and armored divisions in limited and sometimes unsupported attacks that usually resulted at the very least in gaining yards instead of the breakthroughs desired by their command. These above tactics and battle plans and the capabilities of the three warring nations' tanks were in direct response to the others' battle plans and their armored forces.

The unquestioned victory of the German armored forces during 1939 through the summer of 1942 speaks to the training, planning, and operational momentum through mobility the Germans possessed in abundance. The only area that was overlooked was the planning at the strategic level for a long war of attrition. Production of Germany's armored forces only began for total war with the introduction of Albert Speer and Heinz Guderian in 1943, a full three and a half years after the invasion of Poland in 1939. The attrition battle was one that Germany could ill afford given her lack of planning, and the lack of resources for a long war. This type war, again forced Germany to economize her resources and build forces that was capable of sustained combat, while destroying her

¹²⁷ Ibid, pg. 237-239.

enemies. The idea of a “weapon of destiny” became the norm for Germany and that weapon was to be the Panther tank. Capable of sustained combat after her teething problems were corrected, the Panther destroyed her enemies in vast quantities on the battlefield as we shall soon discuss.

The problem for the Soviets after the invasion of their country was how to stem the German horde and gain the initiative in battle. Jarymowycz suggested that the Soviet deep penetration theory was more than what historians describes as vast amounts of barbarians overcoming the Germans in battle. Further, suggesting that the Soviet planning at the army and front level for the most part was superior to the combat operational maneuvers of the Germans and cited a very detailed and specific instruction guide for carrying out those plans. One fact seemed to escape Jarymowycz and Glantz notice, for the Soviets would have never been able to employ those deep penetrations without the overwhelming numbers of both men and armor. Quantities for the Soviets, is a term synonymous with yet another term, and that term is attrition. The only training required of the Soviets in the attrition battle was to attack and keep on attacking no matter what the cost in men and materials, for the allies had one resource that the Germans did not have and that was a numerical population so vast, it outnumbered the Germans as we shall see sometimes in the area of ten, sometimes twenty to one just for the Soviet Union alone.¹²⁸

¹²⁸ Hart, Generals Talk, 216.

CHAPTER VII

EFFECTS OF ATTRITION

In chapters five and six, operation orders, tactics, strategy and operational maneuver was briefly discussed. This chapter will deal with an older military term: attrition, the wearing down and ability of an armed unit or force to overwhelm another armed unit or force by sheer numbers of men or materials. Attrition has not always played the deciding role throughout armed conflict, but has decided enough battles and wars that its preeminence is still used by professional fighting men when planning long term conflicts. In today's battles and wars the old axiom still holds true, "amateurs study tactics and strategy, while professionals study logistics." The wearing away of a fighting force and its inability to sustain itself in combat during World War II has added yet another factor to the battlefield on a much more significant role than in the past. The tank and its battles became the weapon of choice for the belligerents of World War II. The enormous quantities of fuel, ammunition, oils, armor, rubber, coal, copper, tin and man hours to assemble it all, was required to support those weapons of choice and used vast amounts of resources by the countries actually involved in the fighting, not to mention almost the entire resources of the World in one form or another supporting the entire effort. Logistics or attrition became the dominant weapon that the allies used against

Germany, especially after the United States entered the war. Even as early as September 1941, some farseeing German Generals and others began to notice that logistics would indeed decide the war.

The question becomes, how did attrition (logistics) influence the tank and the battles it fought for all sides? The answer is both simple and complex. The simple answer is that the Allies had enough men and materials to overcome the Axis men and materials. While the complex answer also involves men and materials, while adding other factors such as production, space, and time. Taking into account the population of Germany that had a conservative figure of approximately eighty million, while Russia alone had a population of roughly one-hundred fifty million and that of Britain had about sixty-five million, it is not hard to see that Germany at the very least is outnumbered two and a half to one. Add to the allied population figure, that of the United States, Canada, India, Australia, New Zealand, South Africa, and the rest of the British Commonwealth, the numbers arrayed against Germany become staggering. To be fair to the numbers arrayed against Germany, the United States and the British Commonwealth also had to fight the Japanese in the Pacific theater of operations.

The population figures of the Allies of course have to be mobilized, and that is where time and space come into the picture. The vastness of Russia, together with the time of season the Germans invaded all played a significant role in delaying the German advance. Blumentritt stated in B.H. Liddell Hart book, that the badness of the roads was the worst handicap, and next to that were the railways.¹²⁹ Those bad road and railway systems all played major roles in why the Germans were unable to adequately re-supply their armored formations and move at a pace that might have decided the battle of

¹²⁹ Hart, Generals Talk, 176, and Mellenthin, Panzer Battles, 153.

Moscow and Stalingrad at an earlier date and achieved victory for the Germans.

Although, the Germans overwhelmed and captured vast amounts of men and materials, the vastness of Russia's territory and bad transportation system created the time necessary for those allied numbers of men and material to mobilize.

Another very important and often overlooked fact by some historians is that the moment the Soviets were invaded by the Germans, the Soviets immediately began a program to institute a major industrial war footing, while German industry after two years of combat and combat losses remained on a peacetime footing. Thus, began the battle of attrition (logistics), with the Allies already ahead of the game due to the Soviets foresight and necessity. Added to the Soviets industrial ability to out produce the Germans in certain areas; the one area and most significant area was in tank production, on top of that was Russia's ability to produce en-masse the one tank it was to use throughout the war without major changes, the T-34. The Soviet ability to streamline its production saved time, energy and resources that the Germans did not adapt and could not imitate as the war progressed. The production race for supremacy of the battlefield began the moment the Germans invaded Russia and would continue un-abated by the allies until the Germans were defeated. Germany's biggest mistake for their weapon of choice was their inability to stick with a tried and true main battle tank using all their resources and might in producing one or two tanks until it was too late. The back and forth debate about the type of German armored tank did at one point get a brief respite and that was when Albert Speer took over the production of Germany's tank forces, together with Heinz

Guderian as the Inspector of Armored Forces; this happened in late 1942 for the former and early 1943 for the latter.¹³⁰

If any one allied tank of World War II defeated the axis armor, it was not the armor, firepower, or even the mobility of the allied tanks, it was the numbers engaged and produced by the allies that won the battles and eventually the war. The American industrial production capacity for obvious reasons was never in any serious danger of being bombed or destroyed by the Axis forces. While the Soviets did in fact lose a significant portion of their tank production capability initially due to the German invasion in such places as Kharkov, Tula, and Stalingrad. The Soviets responded by moving lock, stock and barrel all equipment required to continue tank production beyond the Ural mountains out of range of the German war machines bombers.

This massive moment of equipment, materials, resources and manpower, together with their planning and implementation of their war making capacity was in fact the real reason behind the defeat of the German armored forces.¹³¹

The British on the other hand from the beginning of September 1939 with the invasion of Poland had to endure bombing of their factories up until approximately September 15, 1940, when the air-battles of Britain switched from the bombing of her factories to the bombing of her cities. Periodically, throughout World War II, and after September 15, 1940, Britain was to receive reminders that her industrial base could still be reached with Germany occasionally bombing her industry. Even under this terrific

¹³⁰ Ripley, *Wehrmacht*, 281.

¹³¹ Goralski, *Almanac*, 167.

bombing campaign by Germany, the British “still managed to produce tanks in parity if not in quality to the Germans.”¹³²

The Germans fared the worst of the bombing campaign during World War II by the Allies due in measure to the American and British air forces that continually rained down thousands of tons of bombs. Fantastic as it may sound, the allies never went after Germany’s tank production facilities until late in 1944. The tank factories in Germany never received--even in those dire times--the attention of the allies’ air power, which would have halted the flow of Germany’s weapon of choice. The same allied air power did not even bother the synthetic oil producing factories, rail systems, or electrical power systems (dams) that ran the German factories until late in 1944. This was one of the main reasons Germany was able to continue the war unabated; “Germany’s ability to continue production of her armaments insured her survival, for as long as she could produce, the war would go on.”¹³³

Ultimately, Germany could not hope to catch up to the industrial making capacity of the allies, first with Russia who matched Germany’s tank production in 1942, then surpassed her in 1943-1945. The Americans began their tank production in 1941, and did even better in a much shorter time than the Germans, creating parity with the Germans in 1943 and surpassing them in tank production in 1944-1945. In all areas of war making materials, the Germans were beaten on production figures by both the Soviets and Americans by 1944, while sustaining a terrific bombing from the allied air forces to boot. In the end, Germany, by September 1944, had lost the race to produce in record numbers the required material war equipment needed to sustain all out war with three of histories

¹³² Hart, *The Tanks*, Volume II, 1939-1945 Frederick Praeger New York, N.Y. 1959, pg. 140

¹³³ Ripley, *Wehrmacht*, 282-283.

greatest producers of armaments. The following account is of the tank producing tables of the Sherman, T-34 and German Panther.

The T-34 had already been in production since before the war had begun with Russia and its basic design was to be used through out the war. The German armored forces destroyed as stated earlier over ten-thousand tanks and armored forces of the Soviet military in the first month of combat without the Panther but, those forces destroyed included the Soviet T-34.

Even after the Soviets moved their tank production facilities beyond the Urals, their ability to build furnaces and start producing tanks within six months was amazing considering that before the war it took an “average of five years to build a Soviet furnace.” The Soviets under full retreat from the Germans in June 1941 still produced over eight hundred tanks a month until 1942, “the Soviet Union increased its production from 4,800 tanks in the last six months of 1941 and 11,200 during the first six months of 1942 to about 2,000 tanks per month after 1 January 1943.”¹³⁴ Given the above numbers from David Glantz book, and taking into consideration a conservative figure, one arrives at the very low side of production of approximately 61,000 tanks (T-34) during the actual combat phrase of the Germans and Soviets. Other sources, including wikipedia and Achtung Panzer tend to inflate those numbers to a high of between 65,000 tanks for the latter to about 84,500 for the former ending its production in 1956.

The “German Panther never exceeded 6,275 tanks of all types and models” and began its career at the battle of Kursk against the Soviets in July 1943.¹³⁵ The Soviets alone had a superiority of ten to one, not

¹³⁴ Glantz, *Colossus Reborn*, 247.

¹³⁵ Parada, “Achtung Panzer,” pz4.

including the Americans who had comparable numbers to the Soviet T-34 with their M-4A3 Sherman tank. To be fair, the Sherman first entered combat with the Germans in North Africa in 1942 with dismal results, in Sicily and Italy in 1943 and again after the Normandy invasion on June 6, 1944. The first time the Panther encountered the Americans and their Sherman's in large numbers was in the hedge-grove (bocage country) in Normandy and performed with equally dismal results as in North Africa. In my opinion the reason our armor has engaged the German tanks as successfully as it has is not due to any means to a superior tank but to our superior numbers of tanks on the battlefield and the willingness of our tankers to take their losses while maneuvering to a position from which a penetrating shot can be put through a weak spot of the enemy tank. – Col. S.R. Hinds, CC B, 2d Armored Division¹³⁶

The American M-4A3 Sherman was produced more than any other type and model of the M-4 series and came in just short of the T-34 in the numbers produced, with approximately 44,000 armed with the 75mm gun and 6,465 armed with the 76mm gun.”¹³⁷ Taken together, the American Sherman, and the Soviet T-34 had a combined total of over one-hundred and fifteen thousand combat tanks excluding all other makes and models of the two countries and the British to boot. The 6,000 German Panther tanks faced overwhelming odds of a little over fourteen to one, bearing in mind that the Germans still retained the excellent Mk IV, Jagdpanther, StuG III and StuG IV assault guns in marked numbers to support its main battle tanks, but not even close to the

¹³⁶ Jarymowycz, *Tank Tactics*, 263.

¹³⁷ [akirk/tanks/United States/mediumtanks/M4/M4.html](http://akirk/tanks/United%20States/mediumtanks/M4/M4.html) February 13, 2003

production levels of the American Sherman and Soviet T-34s. Between the years 1943-1945, the Allies and Axis in Europe moved steadily towards a war of attrition using their weapon of choice, the tank. The innovation of the German blitzkrieg using the mobility of the tank gave way to the Gods of production, numbers and resources of the past. In 1943, prior to the battle of Kursk, the Germans off-set their numerical inferiority through superior training, tactics and mobility; after 1944, the Germans were indeed hard pressed to even maintain their panzer divisions in the field let alone challenge the combined might of almost the entire World's resources. The production of vast amounts of war material that including aircraft, shipping, artillery, automatic weapons and more importantly fuel added to the Allies' dominance on the battlefield after 1944 and at a time the Germans were spending their last resources on the production of the one weapon they believed would save them, the tank. Ironically, the Germans may at the beginning of the war understood that the tank with its all combined arms approach was the superior ground weapons that the Soviets adopted; the Allies took it one step further by employing fighter bombers, mines, and strategic bombing on crucial economic production centers later in the war as the allied all combined arms approach to destroy the Germans weapon of choice.¹³⁸

As the war progressed after 1943, the Germans reverted back to their time honored tactic of strict discipline and obedience to command, limiting the innovation of the fighting troops and their commanders, while the allies' leaders allowed their commanders and troops to expand the learning curve and improve doctrinal-operational mobility. This mentality was the direct result it may be said of the numbers engaged; for Hitler believed that the war was being mismanaged with unnecessary losses being

¹³⁸ Ripley, *Wehrmacht*, 287, 316.

incurred, while the Allies had the numbers to experiment and overcome any potential setbacks. The following illustrations will suffice: in “January 1944 Soviet superiority in strength was considerable, and the following Soviet forces were employed: Against German Army Group South Ukraine – 34 rifle formations, with 11 tank formations – Against German Army Group North Ukraine – 67 rifle divisions, with 52 tank formations.”¹³⁹ The “Soviets superiority on January 12th, 1945 to us was 11:1 in infantry, 7:1 in tanks, 20:1 in guns, with an evaluation of the enemy’s total strength gave him a superiority of approximately 15:1 on the ground and 20:1 in the air, and this estimate did not err on the side of exaggeration.”¹⁴⁰ “In July 1944, the allies in France had a superiority of three to one in tanks and superiority of more than thirty to one in the air.”¹⁴¹ “During 1943, Soviet factories churned out 24,000 tanks and assault guns compared to Germany’s 9,500; the following year, German production surged to a war time high of 17,000 tanks and assault guns, but the Soviets were able to boost their production to 29,000 heavy armored vehicles.”¹⁴² The inability of the German industrial complex to keep pace with the Soviets clearly demonstrates that by 1944, the Germans were “Fighting the Materalschlacht.”¹⁴³

“If the German Army had an Achilles heel, it was that its weapons were too complex and sophisticated to be easily mass-produced; as the war developed into a struggle between rival industrial systems, the Germans had to move from almost hand-made methods of construction to mass-production methods under the weight of relentless Allied bombing and horrendous frontline losses, however, the Germans could only lose

¹³⁹ Guderian, Panzer Leader, 327.

¹⁴⁰ Ibid, pg. 382.

¹⁴¹ Hart, Tanks Volume II, 349.

¹⁴² Ripley, Wehrmacht, 275.

¹⁴³ Ibid, pg. 299.

the production race.”¹⁴⁴ According to the above tables, the only conclusions that a professional soldier could institute was that of immediate surrender by the Germans, immediate victory by the Germans, or a long drawn out war of attrition in which the Allies had the upper hand.

As the war progressed in the Soviet Union, the T-34 was being swamped by combined arms and pack tactics of the Germans smaller and lighter tanks, while the introduction of the Panther switched this tactic around for the Germans, with the Soviets using combined arms and pack tactics of its T-34 to overcome the much heavier and better armed Panther from 1943 to the end of the war. The Americans either through their arrogance, their inexperience, or a little of both, and General McNair had to use the vastly inferior M-4 Sherman in battle with the Panther creating heavy casualties for the Americans who had to learn on the job tactics both the Soviets and Germans had already used since 1941. To be fair the Americans did in fact learn fast, using such commanders as Generals Patton and Wood. We shall continue the discussion on the misidentification of the Panther; “The Panther was actually larger than the Tiger (68 centimeters - 2.7 inches wider and 34 centimeters – 1.4 inches higher) but it was always portrayed as the lesser tank. Its presence definitely created less panic. It was one of the curiosities of the war that the Tiger’s legend grew faster than its kills. There were only three weak Tiger battalions in all of France but they were reported to be everywhere. Panthers outnumbered Tigers by at least four to one, knocked out more armor, and overran more infantry but never inspired quite the same terror.”¹⁴⁵ Even German Generals misidentified their own tanks as suggested in General Mellenthins book where his footnote states; “The

¹⁴⁴ Ripley, *Wehrmacht*, 277.

¹⁴⁵ Jarymowycz, *Tank Tactics*, 265.

Panther was regarded as the *dernier cri* in armor. Like the Tiger it mounted an 88-mm gun but had lighter armor and was more mobile. (Later models mounted a 75-mm gun.)”¹⁴⁶ This last sentence is clearly incorrect, since the Panther used the 75-mm gun from the beginning of its production and “later suggested the addition of the 88-mm gun, but the program was cancelled.”¹⁴⁷ This 88-mm gun was only produced in limited numbers for the assault guns (Panther chassis) since the 75-mm gun produced better results with its higher velocity, as stated earlier. ¹⁴⁸

The only tank that could in fact deal with the Panther and Tiger for the battle of France was the up-gunned Sherman using the British seventeen pounder gun (now known as the Firefly) used by the British. Still lacking the mobility and armor of the Panther, the Firefly’s formidable gun gave it least a fighting chance at greater distances than the Sherman’s 75-mm gun, and if the Firefly used ambush techniques, it produced results comparable to the Panther’s 75-mm gun. The drawback in using the Firefly besides the above mentioned, was they were never produced in large numbers by the British, and as the Americans discarded them, such men as General Bradley and the American fighting men who coveted them begged the British to supply Americans with this formidable up-graded Sherman. The war of attrition came down to the war of production, since both are used interchangeable when speaking of the production of and the elimination of the tank units engaged in combat.

¹⁴⁶ Mellenthin, *Panzer Battles*, 213.

¹⁴⁷ Parada, “Achtung Panzer,” pz4.

¹⁴⁸ Jarymowycz, *Tank Tactics*, 277.

CHAPTER VIII

INCIDENTALS

The focus on the incidentals of the armored units of the three protagonists leads to such things as range finders, night scopes, cupolas, storage compartments, and radio communications. The Panther had the radio communications, range finders with three ranges of 1000 meters, 1500 meters and 2000 meters on its scope, a storage compartment that held seventy-nine 75mm gun rounds of high explosive, and armor piercing rounds. The T-34 held seventy-seven rounds with a mix of armor piercing and high explosive rounds, but only nine rounds were available for immediate combat since its compartment size was too small to hold the additional rounds. The additional rounds were stored underneath the floorboard of the T-34 under the floor plating. This could have an adverse affect in combat situations when speed of re-loading was of the essence. The Sherman had a 75mm gun with a mix of ninety-five rounds of armor piercing, high explosive and smoke rounds. The Sherman also had good radio communications in its vehicles, while approximately one in forty five Soviet T-34s had radios, usually for the Battalion commander only.

The gun sights of the Panther were far superior to the Soviet T-34 and Sherman due in part to its range finder and the number of its selective switches it had for the

different ranges. The Panther later in the war also had the night vision scope that enabled it to conduct offensive operations at night. This ability also leads to the Panther conducting defensive operations at night far more effectively than either the Soviets or Americans. After World War II, the Allies would use this information gained from the Germans night scopes to develop their own night vision systems for both tanks and infantrymen.¹⁴⁹

The low silhouette of the T-34 enabled it to remain hidden in many circumstances, while the Sherman and Panther had to remain in the hull down position behind low hills and camouflaged in the woods and rolling plains. The added addition of the 50 caliber machine gun to the Sherman allowed it to defend itself from the air force of the Germans, while the Panther and T-34 machine guns were more suited to the protection of its vehicles by the opposing ground forces.¹⁵⁰

The Panther also had the advantage in “tank recovery teams that were highly trained in the retrieval of battle damaged and inoperative vehicles. These teams usually accompanied the forward combat troops into battle and would respond immediately to a commander’s request to recover damaged tanks.”¹⁵¹ The Americans also had these units but they usually accompanied the rear echelon units at the higher headquarters level and would respond after a battle had taken place and the allies were in control of the area. The Soviets were much more ineffective and would recover damaged vehicles after a battle they had won and would have to wait for long periods of time for even minor repairs and the turnaround of their battle damaged vehicles. This ability to recover and repair battle-

¹⁴⁹ Parada, “Achtung Panzer,” pz4.

¹⁵⁰ Conners, “M4 Sherman”

¹⁵¹ Jarymowycz, Tank Tactics, 276.

damaged tanks was less of a factor on the tanks themselves, and more on the training and standard operating procedures of the Armies involved.¹⁵²

While the T-34 did in fact have advantages in numbers produced, low silhouette, easy to produce and cost effective with a good engine. Likewise the Sherman was easy to produce, cost effective, easy to repair and was produced in vast numbers second only to the T-34. The Panther had the advantages were it mattered in its thicker armor, higher velocity gun, and mobility comparable to both the Sherman and T-34. The most significant advantage belonged to the T-34; the Soviets were producing this main battle tank before the start of the German invasion and continued to produce the same model throughout the war without making significant changes other than the up-gunned 85mm to deal with the Panthers and Tigers. The T-34 was already superior to anything the Germans had before and during the first two years of the war. The decision by the Soviets to implement this continued program would have a detrimental effect on the Germans who shopped around for a main battle tank to counter the Soviet T-34, making them lose valuable time that they could ill afford.

The old argument over which quality was needed to ensure the best performance of the tank raised the stakes in an already overstretched and overtaxed German industrial system. Most of the armored tank generals under Hitler preferred speed and firepower to armor. The less educated non-tank generals preferred armor and firepower over speed like their master Hitler. These two opposing ideas by the Germans led to the production of numerous types of tanks and assault guns instead of focusing all their strength on the production of one formidable type that had the balance of all three of the tanks' basic designs.

¹⁵² Glantz, Colossus Reborn, 247-251.

The Americans for their part did focus on the production of the entire M-4 Sherman series, which their production capabilities allowed. However, after the invasion of Normandy and the realization of German superiority in tanks, the Americans continued down the same unchanging path, to the detriment of the American soldier-tanker. This American mind-set would have dire consequences for themselves and their Allies after the War. Even when the British made suggestions to up-gun their Sherman with their 17 pounder, the Americans balked. These inter-allied squabbles would lead to temper tantrums and hurt feelings on all sides over issues that were more pertinent to kindergartens rather than professional officers who should have had their men's safety at the forefront in mind.¹⁵³

The minute issues stated above have a place in the discussion on which tank was the superior combat vehicle of World War II. The main reason is that the basic definition of the tank as a weapons platform that included armor, firepower, and mobility transformed and expanded that definition as the war progressed. The evolutionary expansion of the basic definition had to encompass and take into account that of production, up-grades in armor, firepower, mobility and the little gadgets that enhanced the basic definitions three main characteristics. Research and development particularly in Great Britain and Germany had a profound affect on the outcome of the battles in the western theater of operations later in the war. The development of the sabot round developed by the British is but one example, while Germany's ongoing development of the jet fighter, rockets, night-vision sights and switch to mass-production methods of her armored forces is another example. The Soviets on the other hand saw no need to change what they considered to be the war winning strategy and continued with their tried and

¹⁵³ Jarymowycz, Tank Tactics, 259-260.

true methods, that of mass-production of the T-34 with very little invention and innovation. Although the basic definition of the tanks characteristics expanded to include the refinements needed to ensure better operational methods and to enhance those three characteristics, the fact remains that the Panther had the edge in armor, firepower, and mobility, along with their crews who had the better tactical and operational training. The only advantage the Allies had was that of industrial production that produced the numbers of combat tanks that allowed the Allies to use those same pack tactics that the Germans first used with the invasion of the Soviet Union. The only question to be asked is, "Is the Panther superior to the T-34 and M-4 Sherman?" While logic and fact show the superiority of the individual Panther against other individual foes, the numbers employed by those foes on the battlefield trumped its superiority. The following combat situations will indeed show the superiority of the Panther to that of the T-34 and Sherman and further show that the Soviet pack tactics or (the military's concept of battle of attrition) is still as relevant in World War II as in the past.

CHAPTER IX

EASTERN FRONT TANK BATTLES

The tank battles on the eastern front between Germany and the Soviet Union give un-contested historical precedence over all other tank engagements throughout history. The sheer size of the geographical map and the numbers of tanks engaged is unprecedented at any other time in history. Not even the Persian Gulf War of 1991 between Iraq and America compared to those minor tank battles of World War II, since a majority of the Iraq tanks were destroyed by attack helicopter and jet fighters. In addition to these tank engagements of World War II, were the British and Americans against the Germans in France and North Africa. However, since the Panther was not introduced into combat until the summer of 1943, North Africa will not be discussed. The following examples will suffice to show the enormous losses suffered by the Red Army's T-34 tank prior to the intervention of the Panther: "1941, on hand 3,100 T-34s, lost due to combat 2,300. In 1942, on hand 14,200 T-34s, the losses were 6,600. By 1943 the Soviets had on hand the incredible number of 23,900, with a combat loss of 14,700 T-34s."¹⁵⁴ Admittedly, the Panther was introduced into the second half of 1943, showing that the high rate of T-34 losses was attributed to the German Army's superior training and the intervention of the Panther. "Sixty one point five percent of the T-34s engaged were

¹⁵⁴ Glantz, Colossus Reborn, 628.

destroyed” as opposed by the German’s losses of forty three percent for tank on tank engagements.¹⁵⁵

The battle of Kursk (Operation Citadel) in July 1943 was the “first action the Panther tanks fought in (approximately 250 Panther) with the opposing Soviet forces, or any other opposing forces in combat operations.”¹⁵⁶ The “Gross Deutschland Division by itself had eighty of the new Panthers organized in a Panther detachment accompanied by Mk-IVs and Tigers.”¹⁵⁷ As expected by General Guderian, the introduction of the Panther had two major flaws; the “first was it gave the element of surprise away and because of its early introduction the Panther did not have the time to properly work-out all of its teething problems inherit in all new equipment.”¹⁵⁸ The resulting combat at Kursk showed that the Panthers major problem was in its inability to sustain “mobility due to its gearbox and transmission drive.”¹⁵⁹ The overwhelming horsepower of the Panthers engine and transmission simply snapped and/or stripped the inadequate gears within the gearbox leaving the Panther stranded. Another important problem was the “fuel lines that was exposed with-in the engine compartment leading to the Panther engine;” albeit this was easily fixed compared to the problems of the gearbox that would require a redesign of the part at the production site.¹⁶⁰

“The first appearance of a full battalion of Panther’s in the east on 20 August 1943 outside of Kharkov was instrumental in the blunting of an attack by a whole Soviet tank army, with Waffen-SS Das Reich Division’s Panthers accounting for the majority of

¹⁵⁵ Ibid, pg. 268.

¹⁵⁶ Parada, “Achtung Panzer,” pz4.

¹⁵⁷ Mellenthin, *Panzer Battles*, 218.

¹⁵⁸ Guderian, *Panzer Leader*, 307.

¹⁵⁹ Parada, “Achtung Panzer,” pz4.

¹⁶⁰ Mellenthin, *Panzer Battles*, 229.

the one-hundred eighty-four T-34s knocked out in a single day, the next day a further one-hundred fifty-four T-34s were destroyed.”¹⁶¹ What’s not mentioned in the above engagement is the Geography; the sparsely covered rolling hills and plains gave a clear and distinctive advantage to the German defender who was stopped and had the first shot. On the other hand in the “Arracourt battles (a series of tank engagements between American and German armored formations) in France in September 1944, the Americans accounted for no less than one-hundred Panthers destroyed by the M-4 Sherman and M-18 tank destroyers.”¹⁶² Terrain again played a crucial role as well as the climate in the above battles; “heavy fog with forested hills gave the advantage to the defender (Americans) who simply waited in the hull-down position behind the hills for the German attack at ranges under 300 hundred yards.”¹⁶³ The above lesson is that no matter the superiority of a weapons system, other factors (in this case terrain and climate) can and do influence the outcome of battles.

Prior to the introduction of the Panther in “January 1943 the Russians lost three-hundred fourteen tanks out of four-hundred seventy-nine of the Third Tank Army’s Voronezh Front. The same Third Tank Army brought up to a force of one-hundred sixty-five tanks plus one-hundred twenty-two tanks in various states of disrepair dwindled to a strength of just twenty-seven tanks by 27 February.”¹⁶⁴ The above example shows the bitter tank losses and fighting that raged in Soviet prior to the introduction of the Panther. The example also points to the Germans ability to inflict huge losses on the Soviets using inferior tanks. The type of fighting (all combined arms) used by the Germans still

¹⁶¹ Ripley, *Wehrmacht*, 278, and Mellenthin, *Panzer Battles*, 244-245.

¹⁶² Jarymowycz, *Tank Tactics*, 231-243.

¹⁶³ *Ibid*, pg. 235-237

¹⁶⁴ Glantz, *Colossus Reborn*, 244.

predominated until the battle of Kursk, when battle losses by the Germans led them to depend on smaller numbers of better tanks to do what the all combined arms could not achieve due to battle losses. This is not to say that the all combined arms tactic was not used by the Germans, it is simply that with the introduction of the Tigers and Panthers the slack was taken off an already overburdened tactic.

Accordingly, the German Panther was introduced into the elite S.S, Hermann Goring, Gross-Deutschland and other panzer formations first before it was introduced into the other formations of the German Army. These elite German panzer formations fought another battle “(the fourth) for Kharkov in August 1943 against the Russian Fifth Guards Tank Army and after the fighting ended destroyed a total of four-hundred twenty T-34s in three days of fighting.”¹⁶⁵ Battles in the southern Soviet steppes and particularly the rolling plains of the Ukraine were idea tank country for both the Soviets and Germans to practice their deadly art for supremacy with their decisive weapon of choice. All of the above examples were the norm after the Battle of Kursk until the end of the war; the Soviets would attack in overwhelming numerical numbers of tanks, men and material, while the Germans would defend or counter-attack using depleted numbers of tanks, men and material.

“On 16 – 23 December 1943, the first panzer division, seventh panzer division and the SS-Leibstandarte division attacked and almost surrounded three Soviet armored corps and four rifle corps creating what became known as the Meleni pocket; the Germans had to break off this attack and go on the defensive since they were unaware of this massive concentration until a document found on a dead Soviet soldier convinced

¹⁶⁵ Raus, Erhard, Panzer Operations: The Eastern Front Memoir of General Raus, 1941-1945, (Cambridge, MA: Da Capo Press, 2003), 246.

them of this ambitious, yet unachievable attack.”¹⁶⁶ The “forty-eight panzer corps of the German army attacked near Zhitomir on 25 December 1943 with one-hundred fifty tanks (over one-hundred-fifty were Panthers) on a force of nearly one-thousand Soviet T-34s that forced the Soviets to shift their advance.”¹⁶⁷ As stated earlier this was to be the norm until the end of the war; the only debate the Germans were having about the precarious situation in the East was how best to bleed the Soviet military white.

The debate centered on two schools of thought, one was of course Hitler’s, while the other argument was Generals Manstien’s, Raus and Balck’s. Hitler preferred to hold the line by creating fortified strong points and fighting to the last man, while the Generals preferred “elastic mobility or zone defense tactics.”¹⁶⁸ The general’s view would have created mobile reserves while withdrawing their frontline troops to the rear prior to a Soviet attack, allowing for a massive counter-attack by the Germans. The above tactic according to the Generals might have at the very least prolonged the war until Germany fortunes were reversed. Hitler’s views prevailed and as we now know today cost the German Army numerous casualties and prisoners and theoretically cost them the war.

In the Western Theater of Operations, things were pretty much the same albeit on a much smaller scale than on the Soviet front. One major difference is that the German military was fighting two very different enemies. The British who had the most experience in fighting the Germans among all the Allies including the Soviets, understood prior to the invasion of Normandy that tanks would play the decisive role in the coming fight with Germany. However, their resources would not allow for the building of the kind of tank divisions needed to confront the Germans on equal terms.

¹⁶⁶ Mellenthin, *Panzer Battles*, 263-264.

¹⁶⁷ Raus, *Panzer Operations*, 264.

¹⁶⁸ *Ibid*, pg. 275-276.

The Americans for their part understood that that the tank would play a decisive role, but dismissed reports by the British on the superiority of the German armored forces that they would confront in France. This attitude by the Americans would have a devastating effect on both the Americans, and their British Allies, who had to beg and borrow from their arrogant cousins. One quarter of the British armor was American made, leaving the Americans the majority partner in the fight against the German military and her armored forces. Only later did the Americans realize that the British technology offer what the Americans would call an equalizer with the introduction of the seventeen pounder fitted to the Sherman (Firefly) provide the needed firepower to overcome the Tigers and Panthers in France. Fortunately, some American Generals, such as General Bradley recognized the need to improve the Sherman; “Bradley was reduced to begging Montgomery for Fireflies – of which the British and Canadian armored divisions had none to spare.”¹⁶⁹ As we shall see this inability by the Americans and particular General McNair to cooperate and understand armored warfare would have a profound effect on the operations on the western front.

The Americans and British had encountered the Tiger tank in North Africa, but not the Panther, with the invasion of France the Allies finally encountered a tank they were not prepared to meet. The Panther by June 6, 1944, was an altogether a different tank then the one introduced at the battle of Kursk. German industry immediately set to correcting the problems, and gradually most of the bugs were worked out, though a problem with failure of the rim bolts on the dished road-wheels persisted until the end of the war.”¹⁷⁰ Not only did the Soviets misidentify Panthers on the eastern front, in the

¹⁶⁹ Jarymowycz, Tank Tactics, 259.

¹⁷⁰ Jarymowycz, Tank Tactics, 264.

western theater “Polish General Maczeks armored regiments were being attacked by a weak company of Panthers; they were again mistakenly reported as Tigers by the overcautious Polish regiments.”¹⁷¹ This happened in all theaters of operations during World War II. Yet again, Hitler’s order’s to stand and fight to the last man and bullet, while disregarding his general’s views, predominated in the west as well as in the east.

The problem with hindsight is that it brings into perspective the ideas of the what-if school of thought, while providing professional military men the means to study and analyze the mistakes in order not to repeat them. This of course is both a good and bad thing, good if the military men learn and do not repeat the mistakes of the past. The bad part tends to focus on what went wrong as opposed to settling the differences that caused the war in the first place. Also, too many what-ifs can and do lead to the over analyzing of the numerous military problems creating chaos that know one can make sense of. If anything can be learned from the battles on the eastern front during World War II, it is that another war such as this should never again be fought.

¹⁷¹ Ibid, pg. 177.

CHAPTER X

THE MEN AND UNITS

This chapter will focus on the individual tankers and small units that fought the battles using their new steeds of steel in battle during World War II. The American Army had sixteen armored divisions employed during World War II. The most famous were the first, second, third and fourth armored divisions with such colorful names as Old Ironsides, Hell on Wheels, Spearhead and Breakthrough, all commanded by Patton. General Wood, who commanded the fourth armored division, became Patton's most successful commander. General Wood, along with Colonel Abrams, commander of the thirty-seventh tank battalion, was a combination that taught the German leaders and the Panther crews a lesson in tactics during the Battles of Lorraine. During the Arracourt (Lorraine) Battles, General Wood's headstrong, outspoken behavior, and disregard for orders led to many conflicts with his boss Patton, who probably saw this young protégé as a threat to his command since most of General Woods' battles were won in overwhelming fashion usually without the assistance of his boss. General Woods's units fought these battles and destroyed approximately ninety-six Panthers in less than one week using the M-18 tank destroyers and Shermans. Major General R. W. Grow noted "only the Fourth Armored Division met the German armor in a situation that could be

termed a tank vs. tank battle. This happened in September 1944 when the Fifth Panzer Armee attempted a major counterattack.”¹⁷² Even General Patton said, “the accomplishments of this Division have never been equaled ... and by this statement I do not mean this war, I mean in the history of warfare.”¹⁷³ As stated earlier, fog and terrain played the deciding factor in these battles, with his units fighting the much-celebrated Fifth Panzer Army commanded by the formidable General Manteuffel. “Wood is the Rommel of the American Armored Force”¹⁷⁴

The above battles were not without problems for the Americans if the terrain and climate did not cooperate. According to a U.S. Army report prior to September 1944, “to destroy a Panther, a tank destroyer with a three inch or 76mm gun would have to aim for the side or rear of the turret, the opening through which the hull-mounted machine gun projected, or for the under-side of the gun mantlet.”¹⁷⁵ Providing that the Americans could out-flank and had perfect aiming in the heat of battle would indeed lead to at the least the disabling of the Panther. “According to United States Army ground forces statistics, destruction of a single Panther was achieved after destruction of five M-4 Sherman’s or some nine T-34s.”¹⁷⁶ If the above statement was indeed true, it did not apply in the case of General Wood and Colonel Abrams. “I’m supposed to be the best tank commander in the Army, but I have one peer.”¹⁷⁷ Colonel Abrams tactical training he gave to his soldiers was indeed spectacular; Abrams trained his tank units to always attack from the high ground in the hull-down position, using the first shot to achieve

¹⁷² Jarymowycz, Tank Tactics, 221.

¹⁷³ Ibid, pg. 221.

¹⁷⁴ Ibid, pg. 231.

¹⁷⁵ Parada, “Achtung Panzer,” p4.

¹⁷⁶ Ibid.

¹⁷⁷ Jarymowycz, Tank Tactics, 241.

surprise, and move positions after one or two shots using smoke to cover their withdraw. “Mobility and marksmanship” and aggressiveness by the American Thirty-seventh tank battalion commanded by Colonel Abrams stopped the penetrating German attack in the Arracourt battles that resulted in the re-grouping of the Americans and the Germans.¹⁷⁸ The loss of over one hundred twenty-two Panthers created a loss that the Germans could ill afford.

Dwight D. Eisenhower questioned, “Why is it that I am always the last to hear about this stuff: Ordnance told me this 76 would take care of anything the Germans had. Now I find you can’t knock out a damn thing with it.”¹⁷⁹ The American Sherman clearly did not have the superior firepower that the Panther possessed, but other factors (mobility and training) could indeed influence battles where the Panther was the superior machine. Climate, terrain, mobility, and training were factors that could influence battles; however, planning for climate is subjective at best. While better reconnaissance (the Germans) could influence the ground of the commanders choosing, mobility and training is very much a factor for all sides, even if it takes five or nine tanks to destroy one tank. Sgt Leo Anderson, platoon leader, 2nd Armored Division emphasized the impact of the German Panther, stating “many times I’ve seen our tanks engage German tanks in tank duels, their tanks have the ups on us...”¹⁸⁰

Colonel Bruce C. Clarke U.S Fourth Armored Division said, “Tanks are weapons of terror and when they get behind German lines they create chaos.”¹⁸¹ The above statement demonstrates American armored force when ably led clearly understood the

¹⁷⁸ Ibid, pg. 240.

¹⁷⁹ Ibid, pg. 257.

¹⁸⁰ Jarymowycz, Tank Tactics, 261.

¹⁸¹ Ibid, pg. 206

uses of the tank; the problem was convincing their superiors of their use. General Guderian had the same problem with his German superiors albeit before and during the first part of the war.

The Soviet First through Sixth Guard Tank Armies were larger elite tank formations of the Red Army. The tank table of organization for these Armies was very impressive between the years 1943–1945. The high side in numbers of “tanks and sp (self-propelled) guns for the armies were nine-hundred eighty-four, while the low side in numbers, usually after major battles was as low as eighty-six.”¹⁸² By 1943 the smallest Soviet tank unit was the separate tank battalion consisting of “five KV, eleven T-34 and twenty T-70 light tanks employing them where heavier tank forces could not operate.”¹⁸³ On the other hand a German tank division between the years 1943-1945 on the eastern front had on paper between “one-hundred twenty and one-hundred seventy machines” to counter the massive numbers that the Soviets employed.¹⁸⁴ In reality the German panzer division had at times a low of just twenty panzers (during sustained combat) never exceeding one hundred seventy panzers (when brought up to strength for major offensives, example is the battle for Kursk). The introduction of the T-34 in 1941 against the Germans did in fact give the Soviets the technological edge in armored warfare, but their initial employment did not match their technological innovation. The lack of Soviet training for their armored forces resulted in the destruction of over ten thousand armored vehicles during Operation Barbarossa.

¹⁸² Glantz, Colossus Reborn, 261.

¹⁸³ Ibid, pg. 223-224.

¹⁸⁴ Ripley, Wehrmacht, 335.

Colonel-General Heinz Guderian exclaimed that “the enemy employed his T-34 tank, a tank against which our guns at the time were largely ineffective,”¹⁸⁵ while Major-General Mellenthin added “we had nothing comparable.”¹⁸⁶ “Their T-34 tank was the finest tank in the world,” remarked Field-Marshal Kleist.¹⁸⁷ Guderian’s above sentence is true with the exception of the German 88mm anti-flak gun and did not take in to consideration the introduction of the Tiger and Panther tanks in 1942 for the former and 1943 for the latter. General Mellenthin’s statement is also correct for the time period, and only that time period; however, his statement does not reflect the conditions during the whole war period. Field-Marshal Kleist’s statement, on the other hand, has some merit and deserves some study. However, Kleist’s statement, which was taken after the war, was in direct relation to the Soviets who held him prisoner until his death. This leads one to believe that Kleist would try and gain favor with his Soviet captors, at the very least. However, if Kleist truly believed his statement, he probably did so, on the basis of the number of T-34s produced, their reliability and the number engaged in battle, rather than their firepower, armor and mobility. The above suggestion carries very little weight, since Kleist armor formations were responsible for a large majority of the T-34s destroyed in the course of the war.¹⁸⁸

On the eastern front, the T-34 did in fact have an advantage over the German armored forces; it had great cross-country ability and long range mobility (460km).¹⁸⁹ The T-34 also provided headaches for the Soviets late in 1941; the captured tanks by the Germans were repaired and turned on their previous owners. Some “three-hundred T-34s

¹⁸⁵ Mellenthin, *Panzer Battles*, 155.

¹⁸⁶ *Ibid*, pg.153.

¹⁸⁷ Hart, *Generals Talk*, 221.

¹⁸⁸ Mellenthin, *Panzer Battles*, 189-275.

¹⁸⁹ Parada, “Achtung Panzer,” pz4.

were employed by the Germans for long term service and spare parts were never much of a problem.”¹⁹⁰ Some of the more famous German divisions that used the T-34 for either long term and/or short term service were the following; “First, Second, Ninth, Tenth, Eleventh, Twentieth, Twenty-first, Twenty-third, Second SS, Third SS panzer divisions and the Ninety-eight infantry division just to name a few.”¹⁹¹ “SS Hauptscharfuehrer Emil Seibold from the Third SS Panzer Battalion scored sixty-nine kills using the T-34 during the battle of Kursk in July-August 1943.”¹⁹²

By 1943, the Soviets introduced the T-34/85 in reaction to the introduction by the Germans of the Panther. The T-34/85 was an up-gunned version of the T-34/76 and as the nomenclature suggest, the eighty-five referred to the 85mm gun added to the T-34 chassis. Although, a more powerful gun than the 76mm gun, it still could not penetrate the frontal armor beyond five-hundred meters of either the Tiger or Panther and still had to rely on flanking and rear shots to accomplish the desired effect of rendering the Tigers and Panthers ineffective. The added weight of the 85mm gun affected the range limiting it to “three-hundred fifty kilometers.”¹⁹³ Again, the German Army employed captured T-34/85s by repairing and turning them against their previous owners. The German Army’s use of these tanks was based not on their superior design or performance of the T-34, but of necessity, since the “acute shortage of German tanks dominated the German army on the eastern front, especially after the battle of Kursk.”¹⁹⁴

The Soviet tank forces employed late in 1942 after the battle of Stalingrad performed pretty much as expected, by using overwhelming numbers of tanks to attack

¹⁹⁰ Parada, “Achtung Panzer,” pz4.

¹⁹¹ Ibid.

¹⁹² Ibid.

¹⁹³ Ibid.

¹⁹⁴ Mellenthin, Panzer Battles, 216, 230.

the German defenses; the Germans would respond using mobility and flexibility to employ their reserve panzer divisions to counterattack any Soviet breakthroughs. After the battle of Kursk, the Soviets still attacked in overwhelming numbers of tanks with one proviso. They avoided the German counterattacks when possible and attacked along the German defenses at different points along the front, so that the German reserves would be overwhelmed. This, in turn, let the Soviets penetrate deep behind the German front, allowing the Soviets to exploit and/or interdict the German logistic train and German headquarters. The above tactical strategy was the T-34s (Soviet armored forces) secret of success; the strategic operational mobile group that was used by the Soviets to tear wide gaps in whole fronts of the German defenses. In death, Tukhachevskii's (murdered by Stalin in the Soviet purges of the 1930s) plan to defeat the German invader was resurrected by Stalin and used very effectively in the great Soviet offensives after 1943 using the T-34 as the predominate weapon of choice in those great battles. Strategy, production, unlimited resources and attrition was the Soviets great weapons used to hammer the Germans," and not the T-34 as suggested by amateurs and armchair Generals.¹⁹⁵

The German soldier took his oath to Hitler, but in that oath, the German soldier depended on Krupp, Man and other producers of military hardware to enforce their leader's dream of conquest. After Hitler's military invasion of Poland and France, the next logical target was the Soviet Union. The Soviet Unions vast living space, richness of the land, together with its resources would provide the Germans with all that was required for world domination according to Hitler and his neo-geo-politicians. The only problem with Hitler's dream is that his foresight and desire to conquer did not match the

¹⁹⁵ Mellenthin, Panzer Battles, 292-307.

reality of the situation in both Germany and Russia. The eastern operations in Russia would provide Hitler with a reality check on such issues as resources, production and economic factors.

As stated earlier the Panther never exceeded six thousand two-hundred-fifty machines during World War II. However, the Panther's performance and exploits were truly legendary during its short career beginning with the battle of Kursk. Also noted earlier, the Panther's failures during the battle of Kursk due to its early introduction and mechanical unreliability had mixed reviews by the German generals who employed them in the largest tank battle in history. As stated earlier General Mellenthin suggested that the Panthers were the *dernier cri* in armor, but during the battle of Kursk he stated, "the Panthers did not come up to expectations; they were easily set ablaze, the oil and gasoline feeding systems were inadequately protected, and the crews were insufficiently trained."¹⁹⁶ General Mellenthin's observation of the Panther does at a certain level warrant merit regardless of the seemingly contradiction of the Panther. First and foremost, if the Panther was indeed easily set ablaze, it was probably due to the lack of protection given the oil and gas systems that was later easily fixed.

The training aspect of the Panther like-wise was easily fixed as more and more crews were trained on this particular tank. And finally General Mellenthin's observation of the Panther is suspect for two reasons. The first reason is the "apparent mix-up between the 75mm and 88mm gun; with, as he suggested the Panther had the 88mm gun first instead of the 75mm gun."¹⁹⁷ The second reason is as follows; "I personally set out to make myself proficient in handling the Tiger tank; I learned to drive this massive

¹⁹⁶ Mellenthin, Panzer Battles, 229.

¹⁹⁷ *Ibid*, pg. 213.

vehicle and fire its 88mm gun. With this powerful gun and very strong armor the Tiger was the most successful and effective tank in the world until the end of the war.”¹⁹⁸ Did General Mellenthin not understand that the Panther could run circles around the Tiger, had a longer cruising range, higher velocity gun with better penetration ratio, and was produced three times more than that of the Tiger?

The German Army during World War II had a total of thirty-five armored divisions, with seven of them being SS panzer divisions. Some of the most famous panzer divisions were the sixth, seventh (Rommel’s division during the invasion of France), eleventh, panzer-lehr, Grossdeutschland division, first and second SS panzer divisions, and the Herman Goring panzer division just to name a few. Given “Hitler’s, Goring’s, Himmler’s, close association with certain units and proven commanders in combat, certain units received new equipment first before the regular army did and this included the Panther tanks.”¹⁹⁹ As we shall see, the Panther was a formidable weapon used on both the eastern and western fronts.

After the battle of Kursk, the Panther’s problems were corrected with the exception of the road-wheel pins as stated earlier, and with the arrival of more Panther’s on the eastern front, the Soviet’s over the next two years were forced to come to grips with the armored divisions that employed the Panther and the men who rode them into battle. Men such as Ernst Barkmann, who destroyed “nine Sherman tanks in two days of fighting near St. Lo on 12 July 1944” were the norm for the German tanker that was almost always vastly out-numbered.²⁰⁰ In the latter part of July, 1944, Barkmann once again destroyed fifteen Sherman’s and was recommended for the Knight’s Cross, which

¹⁹⁸ Ibid, pg. 212.

¹⁹⁹ Ripley, *Wehrmacht*, 291-293.

²⁰⁰ Parada, “Achtung Panzer,” pz4.

he accepted on 27 August 1944.”²⁰¹ Other men like “Herman Bix, who fought on the eastern front is credited with destroying over twenty-three T-34s using his Panther.”²⁰²

Another equally successful tank commander was Franz Bake who stated “If we had had this Panther in 1941, the army would have rolled straight to Moscow.”²⁰³

At the German Army’s Division and Corp level, men such as Generals Balck and Raus were responsible for commanding the individual tankers mentioned above. These Generals were highly trained and skilled in the art of operational mobility while using their panzer and panzer grenadier divisions. Unlike the Soviets, the German’s learned their skill very early and usually prior to the start of World War II. The German generals also had almost two years to practice their art of war and gain the experience they needed to fight that usually (with-out Hitler’s interference) produced favorable results.

Like the Germans, the Soviets also used captured battle tanks and used them against their former masters. Unlike the Germans, who had very little problems in securing parts for their T-34s, the Soviets had great difficulty in appropriating such parts for the Panther; the “Panther that the Soviets so much desired by their rank and file was given as a sort of a reward for outstanding service by deserving crews of the Soviet Army.”²⁰⁴ Since the Panther was a vehicle highly sought after by the Soviet soldier, it stands to reason that the political Commissars attached to the Soviet army was highly agitated by their soldier’s preference for this Nazi beast. “It is suggested to the Red Army to use such German tanks as the StuG III and Pz IV due to their reliability and availability of spare parts. The new German Panther and Tiger can be used until they

²⁰¹ Ibid.

²⁰² Kurowski, Franz, Panzer Aces German Tank Commanders of WWII, Translated by David Johnston. (Mechanicsburg, PA: Fedorowicz Publishing, 1992), 79-131.

²⁰³ Ibid, pg.63.

²⁰⁴ Parada, “Achtung Panzer,” pz4.

break down without trying to repair them. “They have bad engines, transmissions and suspensions”²⁰⁵ Three comments on the above statement will suffice; remember to the average Soviet soldier all tanks are were Tigers, secondly, the Tiger is a well known vehicle that had an under powered engine and bad transmission (both features not attributed to the Panther), thirdly the sophistication of the German Panthers and Tigers were probably beyond the average Soviet mechanics ability to fix in the field. The suspension of the Panther again had independent spring shocks with off-set inter-locking road-wheels that were hard to replace and demanded a large amount of man hours to repair them.

The Soviets were not the only country to “employ the Panther, the British, Canadian, French, American, Polish home Guard, and French resistance all secured the services of this proven battle-hardened vehicle.”²⁰⁶ “After World War II, many French Army tank units were equipped with Panthers; the 503rd Tank Battalion in Mourmelon had fifty Panthers in 1947 and the 501st Tank Battalion used Panthers from 1946 until 1950.”²⁰⁷ “Other post war users of the Panthers included Bulgaria, Czechoslovakia, Hungary, Romania, and Yugoslavia.”²⁰⁸ The Soviets were also not the only ones who misidentified the Panther; “To the American GI, every German tank was a Tiger.”²⁰⁹ It has been suggested that historians recognized the T-34 as the best tank of World War II, when in fact “Historians have generally recognized the Panther as the best all-around

²⁰⁵ Ibid.

²⁰⁶ Parada, “Achtung Panzer,” pz4.

²⁰⁷ Ibid.

²⁰⁸ Ibid.

²⁰⁹ Mark IV <http://web.ebscohost.com/ehost/delivery?vid.6/13/2007>

tank of World War II.”²¹⁰ “Even the mighty T-34 was outclassed by its German clone – the Panther.”²¹¹

²¹⁰ Parada, “Achtung Panzer,” pz4.

²¹¹ Ripley, Wehrmacht, 278.

CHAPTER XI

THE PANTHER

Although historians recognize the Panther as the best tank of World War II, the professional military men who fought the battles had their own particular tank for which they championed. General Manteuffel considered the Soviet Stalin tank to be the “finest tank in the world,” while General Mellenthin considered it a very formidable opponent, but “did not consider it equal to the Tiger.”²¹² General Von Thoma, one of the early converts to tank warfare (next to Guderian), said, “if I had to choose between a thick skin and a fast runner, I would always choose the latter.”²¹³ General Manteuffel agreed with General Thoma’s view that tanks must be fast; the Panther was on the right lines, as a prototype.²¹⁴ The Panther was faster (29-34mph) than the Tiger tank, Stalin tank, Sherman tank (most-times, 29mph) and T-34 tank (sometimes, 33mph) depending on the circumstances for the latter two.

The only tank gun that was comparable to the German Panther’s 75mm gun, was the German 88mm gun (anti-flak, anti-tank, and Tiger tank gun) used in World War II. The same can be said of armor, the Tiger did in fact have more armor, but the Panther was a rabbit to the tortoise (Tiger). The sloping armor of the Panther compensated for the

²¹² Hart, Generals Talk, 99 and Mellenthin, Panzer Battles, 212.

²¹³ Hart, Generals Talk, 94.

²¹⁴ *Ibid*, pg. 99.

lack thickness that the Tiger had. While the T-34 had sloping armor, a lower silhouette and speed comparable to the Panther, it lacked the firepower and thickness of the Panther's armor. The Sherman had the sloping armor disturbed in the wrong configuration, with average mobility, but lacked the firepower of both the T-34 and Panther. Only with the addition of the British seventeen-pounder could the Sherman compete with the Panther and then only within one thousand meters. Guderain was not the only one to comment on the characteristics of the tank; "General Manteuffel stated that tank design must aim at a careful balance between armor, weapons and speed."²¹⁵

In discussing tank design and tactics, it has been stated on numerous occasions that the main defining characteristics were indeed the armor, firepower and mobility, while expanding the definition to include climate, terrain, training, tactics, strategy, and most importantly the resources needed for the mass-production of the tanks. Like the tank's history that was slowly expanded using those basic components into defining a weapon's platform, the short period of World War II expanded the tank's definition by suggesting the addition of other factors that would have a bearing in their fighting ability. If the above sentence is to be considered in defining the next generation of tanks, the same thing could be said that the country that implements that policy will most likely fail against an enemy as simplistic as the Soviets, who used the basic defining points of the tank to overwhelm with numbers their better trained and educated class of soldiers. As stated earlier, the Germans were indeed too good in the building of their weapon systems, spending vast amounts of money, resources, and man-hours that could have been used wisely in the building of less technological advanced tanks such as the Panther.

²¹⁵Ibid, pg. 101.

The building of the Tiger is another example; “two Panthers could be built for every one Tiger produced.”²¹⁶

The Sherman clearly had several disadvantages when engaging a Panther; “the Panther had six distinctive advantages over the Sherman, low flash powder, better gun, better armor, superior sights, superior floatation, and greater speed and mobility.”²¹⁷ If the above sentence is indeed true then the same could be said of the Panther’s performance over the T-34. The only area’s the T-34 might challenge the Panther was in floatation for cross country operations, and of course the massive production advantages the Soviets enjoyed over the Germans. The “data gathered in the Hardison study from one-hundred thirty-six tank engagements (between the Germans, British and Americans) suggest that the significant findings included; range, local advantage of the defense (Germans), advantage of first fire, and the advantage of mass.”²¹⁸ Through out World War II, the Allies always had the advantage over the Germans in the mass production of tanks, but not always in their ability to use those tanks in mass when attacking that the Allies would learn later in the war. The Germans always had the range factor on their side, but their overwhelming psychology to attack on the eastern front often lead them to forfeit the advantage of defense that General Manstein often implored Hitler to adapt. In forfeiting the defense factor by default, the Germans also forfeited the advantage of first fire, simply because during World War II, the tanks had to stop to fire and did not have the move and fire component system that today’s tanks have.

So, of the four factors that influenced the tank battles of World War II, the Germans routinely gave away the advantage of defense and first fire to the Allies and the

²¹⁶ Ripley, *Wehrmacht*, 281-282.

²¹⁷ Jarymowycz, *Tank Tactics*, 264-265.

²¹⁸ *Ibid*, pg. 266.

Soviets. If mass production of tanks was always on the Allies' side and the tank range always on the German side, then the other two factors could very much have had a detrimental effect on the eastern front if used correctly by the Germans as several of the German General's (Manstein, Balck, Mellenthin and Raus) suggested. The elastic defense, or zone defense were pretty much the same thing albeit with the exception of the name each General gave to such tactics. Manstein, Balck and Mellenthin used the term elastic defense, while Raus used the term zone defense. These two defenses if used correctly as suggested, at the very least could have prolonged the war, at the most it was hoped it would give Germany time to better position itself for a negotiated and honorable peace.

As stated earlier, hindsight is for the amateurs, armchair Generals and historians that can analyze the what-ifs of the past. The past of World War II had in many respects provided for the making and transition of warfare into a fast paced slugfest using mechanical and mobile armored forces that covered vast distances in shorter periods of time never before scene in history. The invention of the tank was enough for the future historian to evaluate, but adding to that invention is every other factor that accompanies that invention. The men, tactic's, training, strategy, terrain, climate must be added to the historical past in order to have a better understanding of that past. A comparable parallel look of the past is of course important, but a look at a time period must also be accompanied by a study of time periods both before and after. After World War II, many countries used the Panther as the premier battle tank and its blueprint led to the design of many other variations. The same could be said of the T-34 and Sherman tanks. One important factor about the above-mentioned uses of the Panther, T-34, and Sherman is

that the Panther was adapted by first world countries, while the T-34 and Sherman were reduced to serve third world countries.

The tactics, strategies and training of the combatants in tank warfare were not again seen since the tank battles of the Israeli's sixty-seven and Yom Kippur wars. In those wars, the Israeli's employed the same tactics employed by the Germans with their initial invasion of Russia. The surrounding enveloping maneuver the Germans used on the eastern front was used by the Israeli's in their battles against the Egyptian armies on the Sinai Peninsula. The Israeli's also used three of the four principals in Hardison's nineteen forty-four study in the battle at the Golan Heights. Range, first fire and local defense used by the Israeli's stopped cold the massed armor attacks of the Syrians and their Arab allies, resulting in an overwhelming victory for the Israeli's tank forces.

Again, the maneuver of surrounding and enveloping an enemy was used in the freeing of Kuwait during the Persian Gulf War. General Schwarzkopf surrounded two-thirds of the Iraqi army that was stationed in Kuwait and destroyed over two-thousand Iraqi tanks in three days of fighting resulting in victory for the American and allied forces. Fast forward to two-thousand three with the invasion of Iraq, the America military used the strategic operational mobile groups practiced by the Soviets during World War II, by-passing large contingents of the Iraqi military penetrating to the capital of Bagdad in just under four weeks, resulting in another America victory, or so it seemed. Like the Soviets, the Americans penetrated until the objective was reached, then chaos ensued (just like the Soviets in their penetrating battles late 1942, until after the battle of Kursk), for by by-passing large amounts of troops still in the field and not engaging and destroying them, left them free to pursue a guerrilla war not unlike the Soviet front when

the “Germans began to by pass pockets of Soviet soldiers (late 1942, until the end of the war) leaving them free to pursue partisan activities.”²¹⁹

So the question becomes, which strategy is best suited for combat conditions? The answer seems to be both, depending on other factors. The Soviet strategy is best suited when overwhelming numbers are engaged in battle, while implementing a policy to deal with a hostile force after the breakthroughs. This of course was accomplished for two main reasons, the first was the Soviets left enough available forces to deal with the Germans; the second reason is that the Soviets were defending their own territory and had the advantage of support from the surrounding population. The German strategy is best suited for a quick and overwhelming attack on a so not determined enemy ensuring that a prolonged war will not ensue. The Germans best accomplished this strategy with their war in Poland and France, where once their armies were defeated the war was over.

Like the Soviets and Allies in World War II, the Americans have the ability to mass produce any war material that we need in overwhelming numbers to defeat the enemy. The question becomes, do we have the will to do so? The Germans and Soviets both had the will to destroy the other during World War II, and the Soviets won that war using overwhelming numbers to do so. The Americans have been fighting seven years in both Iraq and Afghanistan using both numbers and extreme force with no end in sight with the possible exception of defeat (withdraw). Like the Soviets, the Iraqi's and Afghan's creation of large forces of freedom fighters (enough to sustain operations) and continue the war is leading to the collapse of will by the Americans to continue fighting. If this indeed does happen, then like the German's during World War II we will be on the defense and the initiative will have passed to the so-called freedom fighters and the war

²¹⁹ Ripley, *Wehrmacht*, 285.

will continue with the Americans playing defense just like the Germans did on the eastern front. Once this initiative is gained, the momentum swings in favor of and on other factors that affects politics. Such factors, as political and economic support by many other countries will change sides and support the side that has their best interest in mind and that can have dire consequences for today's Americans just like World War II did with the German allies jumping ship (Rumania, Hungary, Bulgaria and Finland), provided a downward spiral for which the Germans never recovered.²²⁰

The above is both a comparable historical look at the German-Soviet view of war and today's American outlook in the arena of politics, and is based partly on speculation. Such thinking is of course productive when evaluating the historical past, but becomes counter-productive when applied in real world situations of today. Since a many people fail to recognize the past (the studying of all areas like politics, economics, religion and comparing them both simultaneously with others of the same time period and other time periods with other countries) either through neglect or ignorance, they do in fact tend to repeat the past. With today's technology, since it is possible to destroy more than just a country, this repetition of past mistakes could destroy the world.

In closing, it has been my contention to compare the German Panther, Soviet T-34 and American Sherman tanks of World War II to determine which arises superior. In doing so, I believe the facts speak for themselves, revealing that the Panther indeed was the premier battle tank of World War II. The problems associated with the Panther have been found to be both trivial and fixable, and not to the degree that history has portrayed them. The misidentification of the Panther by all the Allies, including the Soviets, suggests at the very least a lack of training in identification of German armored vehicles,

²²⁰ Ripley, *Werhmacht*, 266, 289.

a problem that was either through ignorance, fear, or a little of both. The Panther had the superior 75mm L-70 tank gun and the secondary accessories like the MG-42 (the best light machine of World War II) to go with it. The superior frontal armor allowed the Panther to win almost all battles with its opponents when attacking and defending in distances over five hundred meters. Its mobility and speed is legendary, with reports stating that the Panther could outperform any allied vehicle. "It could turn faster than the M-24 light tank, and there is a case of a Panther beating a Sherman around a field, making sharp swerve and reverse of direction in shorter space than a Sherman."²²¹

The use of the Panther, when captured by the enemy, is a testament to its reliability, durability, and likeability by enemy soldiers who relied on it to survive. The Panther's ability to encounter and fight vast amounts of enemy armored forces shows the trustworthiness that the German soldier had in his own equipment. This trustworthiness led the German soldier to risk his life in situations that others dared not chance. The Panther had the superior gun sights and radio communications, giving it the edge in both marksmanship and tactics. If the German Panther had a weakness, it was the lack of numbers produced to counter the allied productivity. The misuse of the Panther later in the war by Hitler's insane orders was yet another weakness of the Panther.

The Panther comes in at first as the best fighting tank of World War II due to the shortened definition of the basic characteristics that defines all fighting tanks; armor, fire power, and mobility. It is the predecessor to almost all the tanks produced by the west after World War II.

The T-34 was most certainly an outstanding tank with superior cross-country abilities and range, combined with an able gun and medium armor; it did accomplish the

²²¹ Jarymowycz, Tank Tactics, 265.

task its master assigned it (moving and firing targets). The design of the T-34 was innovative with its sloping armor and deserves credit for that innovation, but not at the expense of others innovation. The wide tracks ensured that it could move in inclement weather where other armored vehicles could not. The lack of radio communications and bore-sighting for its gun (training) led to real problems for the T-34, such as tactical mobility and the further issuance of orders if the objective was reached. The bore-sighting was a problem easily fixed, while the installation of radios was not; the Soviets frowned on soldiers that showed individual initiative that came with the ability to communicate. Numerous misses by the T-34 gunners was in direct relation to the lack of training that affected its crews, again a problem that was easily fixed as the war progressed. The arrangement of the crew's compartment with the majority of the ammunition placed under armor plates and below the crew's feet was yet another problem that caused slow firing. The most overwhelming advantage the T-34 had over all enemy and allied tanks alike was its numbers. The T-34 was the most produced tank during World War II of all combatants in both its variations, the T-34/76 and T-34/85. Other major advantages were its simplistic ability to be mass produced, and that it lacked the simple refinements that most western tanks had, made them cheap and easy to produce. The T-34s cross country performance and cruising range was never matched by any tank (allied or enemy) throughout World War II. The old saying that "if imitation is the mark of flattery" then the production of the Panther (with German innovation) was to prove it by surpassing the T-34s performance.²²² The T-34 comes in second place as the best tank in World War II mainly due to the expanded definition that included numbers produced and the simplicity to operate said tank.

²²² Author Unknown.

The American Sherman tank had the misfortune to come in third best out of three tanks. The reasons are numerous and not without argument by those who are uniformed. The third place designation is mainly due to the mass production, its simplistic ability to operate and the up-gunning and installation of the British seventeen pounder tank gun (Firefly). The Sherman's ability to communicate is on the plus side, since all Sherman's came equipped with radios. The 50-caliber machine gun allowed the Sherman to defend itself from enemy aircraft, light skinned enemy vehicles, was useless against the Panther tank and provided overkill to individual enemy soldiers. The Sherman's 75mm short-barreled gun could not penetrate the Panther's frontal armor at any distance, including point blank range. Only at less than five hundred meters did the Sherman have a chance at incapacitating a Panther, if shooting at the Panthers side hulls and rear, then only if lucky. The sloping of its armor was nullified by the fact that its armor had to many right angles in its frontal armor allowing for the more powerful Panther's gun to penetrate when hitting one of those right angles instead of deflecting it.

The fact that the Sherman was produced in large numbers was again nullified by the distance they would have to travel to reach the battlefield coming from their American factories. Even the testimonials by the British tankers, Soviet tankers and American tankers suggested that the Sherman most of the times came in second best when fighting the Panthers and Tigers of Germany. With the introduction of the British seventeen-pounder on the Sherman, the Sherman's performance is again nullified by the facts that it was the British who produced them and then only enough for themselves. The great tank scandal of the American Army that predominated the building of the Sherman tank during World War II was a direct result of individual arrogance and narcissism by

such men as General McNair, who was more concerned about his reputation and being right than producing a weapon system that would provide American soldiers the means to fight the enemy on equal terms.

The commanders of the divisions that employed the Sherman's had major flaws in their ability to employ their tanks; the timidity of the commanders and their fear of not losing a battle predominated through out the command level. Such commanders as General Wood were regulated to history for up staging his superiors, while commanders such as Patton protected their own reputations through others achievements (Abe Abrams). The natural aggressiveness of the American soldier was curtailed once they understood they were using inferior equipment in a battle to the death against an equally aggressiveness enemy who was determined to destroy them. This did not stop the American soldier from performing his duty; it simply made him more cautious when dealing with enemy armor such as Panthers, or some other armored vehicles. The M-4A3 Sherman comes in third place as the best tank of World War II, due mainly to the expanded definition of the tank, that included the number of units produced, it simplicity to operate, refinements and innovative attachments, like the hedge-grove plow.

Final thoughts, According to B.H. Liddell Harts account, the "Panther's gun velocity was 3,068 ft/sec. with its 75mm L-70 gun using armor piercing ammunition, higher than all allied and Russian tank guns."²²³ Only the "Tiger II had a higher velocity of 3,340 ft/sec. with its 88mm L-71 gun using Armor piercing ammunition."²²⁴ The 75mm L-70 gun was the supreme tank gun, that in this writer's opinion should have been fitted permanently to the panzer Mark IV, for several obvious reasons; the first reason is

²²³ Hart, The Tanks Volume II, 98.

²²⁴ Ibid, pg. 98.

that the Mark IV was already in mass production mode and would have saved numerous man hours in redesigning and building of a new tank. The second reason is that it was in fact fitted to the Mark IV panzer with very little modifications, while also having very little affect on its performance. The third reason is that the Mark IV had already seen major combat with none of the troubles inherit in new equipment and its crew's were well versed in their duties pertaining to its operations. The leadership of the German military should have implemented this program from the moment it encountered the T-34, while instigating a very aggressive program to increase its numbers early in 1941. The above opinion probably would not have won the war for Germany, but at the very least it might have prolonged it to a degree that would have allowed for a negotiated peace. The idea of a negotiated peace would of course been nil once the world confirmed the atrocities of the concentration camps. The Germans for their part stated the war with a technological edge in such things as radios, radar's, jets, rockets, submarines and night vision scopes and never capitalized on their advantage's. Those advantages if pursued by Hitler from the beginning might have had an effect on the outcome of the war favorable to the Germans. Although we now know that the superior technology in this war did not help the Germans defeat the inferior technology of the Allies, specifically the Soviets.

The limited definition of the three basic Panther characteristics of firepower, armor and mobility was not negated by the expanded definition of the above and terrain, training, resources and attrition as the war progressed, since the fact remains that the Panther still performed as well in the expanded definition.

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