Multiplying an Army
Prussian and German Military Planning and the Concept of Force Multiplication in Three Conflicts

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ABSTRACT

In this thesis the researcher discusses the implementation of force multipliers in the Prussian and German military. Originating with the wars of Frederick the Great and the geographical position of Prussia, force multipliers were key to the defense of the small state. As time continued, this tactic would become a mainstay for the Prussian military in the wars for German unification. Finally, they would be carried through to a grim conclusion with the Second World War and the belief that this tactic would easily make up for Germany's shortcomings in material and manpower.

Key discussions of this thesis are the origins, implementation and reliance on this tactic through the time periods discusses. Figures in German military history, such as Frederick the Great, Clausewitz, and Helmuth Von Moltke, and their philosophies relating to the tactic are examined. As well as the implementation of force multiplication through technological and political evolutions and their effect on the Prussian and German militaries in the conflicts discussed.

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Introduction

Military history has always been of great interest to me and something that I have focused on throughout my educational career. Perhaps this stems from my family's ties to the American Revolution and the Civil War. The Second World War also found its way into my passion and studies. The study of the technologies and strategies employed by each nation were part of this passion. Interestingly enough these strategies throughout history are a way in which the nation's story is told as each nation's strategy tells the story of its past conflicts, successes and failures. In some cases, it also shows the relation between the state and the military in each nation.

The German army is of course no exception to this as it has been one of the nations that has become synonymous with militarism. For almost three centuries, from Frederick the Great to the end of the Second World War, the German military dedicated itself to creating a professional atmosphere that could outperform any enemy force that it came up against, yet it still ended up on the losing side of two world conflicts and has become a warning sign for allowing a nation to allow its military to wield great power and influence. The German military has also been an example for militaries around the world that morals must belong in a military and that it cannot exist separately from the

politics in the nation. The conflicts that the Prussian and German states were in also placed their respective economies in different situations and how much attention was given to the military. Therefore, the German military is a case study for many authors in many different fields examining military tactics, to human nature and philosophy.

This thesis takes focus on a tactic utilized by the German military dating from the time of Frederick the Great and how it was brought to a disastrous conclusion in the Second World War: a tactic that, as for most nations, was born of a practical necessity in order to either compensate for a deficit or to capitalize on a natural advantage. The tactic being force multiplication which puts a great focus on amplifying the abilities of the individua soldier or unit in combat to achieve more than their counterpart. However, where most nations switched tactics or doctrines as time went on during the period in question, the German military took this tactic and evolved it to the current times. However, there comes a point in which evolution becomes reliance and beyond that the potential for an dysfunctional use of the same tactic, which is what happened with the German army.

The tactic in question revolved around the ability to make Prussian and German soldiers accomplish more on the battlefield than their numerous counterparts. Whether this be through achieving higher kill ratios or accomplishing rapid movements that could lead to the encirclement of large enemies' forces, changed through time as conflicts and technology changed. However, as some nations changed their tactics, whether to focus on superiority of numbers or efficiency of logistics, the Prussian and German militaries stayed true to this doctrine for the long term, partially due to the similarity of conflicts they found themselves, i.e., large opponents with no shortage of manpower or materials,

and often facing or threatened with war on multiple fronts. It will also examine the "Guns vs. Butter" discussion and how it pertains to these conflicts.

Originally this thesis was to take a look at every major conflict from the wars of Frederick the Great until the Second World War. This proved to be too broad a scope for this work and will have to be pursued in further studies. Rather, the thesis looks at three major points for the tactic in question relating to its origins, peak, and decline, from the Seven Years War, German Wars of Unification, and Second World War respectively. It will cover the implementation of this tactic through these conflicts and some of the key theorists. This was done in order to give easier examples for readers to understand and showcase how this tactic was employed on the battlefield.

There are some prominent theorists in German military history who are impossible to ignore as their writings serve to give a better context of the situation of Germany, or Prussia. Clausewitz is the first to come to mind as his writings, compiled into the famous *On War,* carried weight from the time they were written after the Napoleonic Wars in the early nineteenth century through to the Second World War and are still studied today. Helmuth von Moltke who led the Prussian army through the wars of unification was, also a great implementor of Clausewitz's ideas, therefore the two are discussed in kind. Also, Heinz Guderian, one of the early theorists of armored doctrine after the Great War, will be discussed along with the implementation of armored warfare in the Second World War.

The literature used in the work is abundant as the German military is a hotbed of topics for authors to discuss. Unfortunately, the primary sources for this paper were only available if translated into English. Even then, the topic of German military history most

often has a hotbed topic that those writing after the conflicts had to contend with, from militarism to the horrors of the Holocaust. The source that is most devoid of hindsight is Rommel's notes taken during the war, though he did not have the necessary time to compile them into a work that considered the larger military situations surrounding him. There is also the barrier of vocabulary as "force multipliers" are a modern term, absent to the writings of Clausewitz and Moltke, creating a focus on the concepts they utilized that match with this strategy.

The abundance of secondary sources show this as some authors choose to focus in on one topic pertaining to the German military, while others cover the military actions of the military and at the same time the political power that it wielded in the nation. This study focuses primarily on the implementations of technology and tactics in the discussed conflicts, but the power of the military is explored as this was something that was fought for by the Prussian and later German military to maintain a sense of independent action in conflicts to create an efficient command system.

This work can easily be expanded on, as this tactic was used over a long period of conflicts that the Prussian and German army participated in. From the technology that was employed in these various conflicts to the way in which the leading theorist thought about warfare. Therefore, the most challenging aspect of this thesis was to limit its scope to something workable for this project, and I thank the professors of my committee for the guidance on how to achieve this effectively.

Chapter One: Origins and First Implementation

Force multiplication is a relatively new term in the vocabulary of the military and in the world in general. In 2007, the U.S. Joint Special Operations Task Force defined a force multiplier as: "A capability that, when added to and employed by a combat force, significantly increases the combat potential of that force and thus enhances the probability of successful mission accomplishment."[1] This is a good estimate for when the actual term surfaced, but the concept of making resources available to concentrate power to a specific unit date back to the beginning of warfare itself. One of the oldest manuals on warfare, Sun Tzu's *The Art of War,* states, "The one who excels at warfare seeks [victory] through the strategic configuration of power…not from reliance on [manpower]. Thus, he is able to select men and employ strategic power."[2] The Prussian strategist Carl von Clausewitz advocated for the concentration of a smaller highly-trained force to achieve objectives though he never used the term force multiplication.

For this thesis the working definition of force multipliers is a **doctrine by which a state expends its resources- time, men, technology and material – in such a way as to make each unit of its military forces more effective compared to expectations**

[1] Joint Special Task Force, *Task Force Operations* (April 26, 2007).
[2] Sun Tzu, *The Art of War,* trans. Ralph D. Sawyer (NY: Basic Books, 1994), 188.

based on the standard doctrine or technology of the day, in order to compensate for the expenditure of larger resources by its larger neighbors and potential enemies. In other words, the tactic of force multipliers is a way in which a state designs its own military units to be more forceful/powerful than those of its enemies, to compensate for the fact that its resources are more limited.

An example of this that will be related to German force multiplication later on would be tank production. Imagine having a tank with a kill ration of 1:1 on the battlefield that is cheap to manufacture and is not a cutting-edge vehicle; in other words, it is able to keep pace with other nation's tanks on the battlefield. A nation with limited resources, like Germany, would then find it advantageous to manufacture a "heavier" tank. With the material needed the nation could produce two, possibly even three of the lighter tank, but with those resources it gives the heavy tank better, armor, armament, optics, etc., in the hopes that on the battlefield it will now achieve a ration of 1:10 against enemy tanks.

It was this type of strategy that the Prussian and later the German army would employ throughout its various conflicts. Force multiplication did not always work to the favor of the military but in some cases it would cause the nation to pioneer warfare either in tactics or by introducing new technological breakthroughs that would make the soldier more effective on the battlefield. Force multipliers have often been tied to technological advancements but in the Prussian system were also utilized in a strategical sense. Also, every nation pursues technological evolution to keep pace with the ever-changing field of warfare, but technological development itself does not always equate to pursing the strategy of force multiplication, as for some nations with a wealth of resources, such as

manpower and natural resources, it is simply not needed. Therefore, it was the way in which technology and theory were applied to the battlefield that gave Prussia a force multiplication edge. The origins of this strategy were practical and were in response to the situation of the state, but by the end of the Second World War, they would be carried to the extreme.

To understand the reasoning behind creating an army that could outperform any other army in Europe with less manpower and material, one must first look at the circumstances in which the young nation of Prussia was placed on the world stage, as opposed to their possible competition. These include factors such as Prussia's geographical location in Europe, the small population at the disposal of the state, and the economic power of the state to raise capital to fund a military in time of war, or to create a standing army. When comparing the state of Prussia to other powers of Europe in the first half of the 18th Century, the odds are not in the small state's favor.

Prussia, the monarchical holdings of the Hohenzollern family, was a scattered series of territories spread across Central Europe in 1648. The two most sizeable sections were the Duchy of Prussia, with its capital Konigsberg, in what today is western Russia and norther Poland on the Baltic Sea, and Brandenburg, with its capital of Berlin, landlocked in what today is eastern Germany. Prussia was located in the center of Europe and surrounded on three sides by land and a small strip of coastline to the north. The strip of coast on its northern border that did not lead to the open sea. In the 18th century Sweden was still a large military power and positioned on the other side of the Baltic Sea. The issue was further complicated in that Denmark could easily control Prussia's outlets to the open sea, and if Prussian shipping made it out of the North Sea, it would encounter

the British Royal Navy, the largest navy in the world. To the west of Prussia was France, with a large force that would threaten the Prussian nation throughout its history. To the south, the Austrian Empire dominated the German states. To the east were Poland and the Russian Empire which could amass large populations and had the benefit of larger territories.

When Prussia began to grow in the eighteenth century, the small state had no natural barriers, it would not be until unification a century later that the Rhine would create a natural defensive line from the west. In the east Russia could rely on vast swaths of land to act as a buffer zone for any invasion. The Austrian empire had the mountains of the Alps to protect its southern border from both France and any Italian states. France had the channel to separate it from its rival at the time, Britain, which was in turn surrounded by water, preventing direct action from a land campaign.

At the same time, because of its small geographic size and lack of significant cities, Prussia was not able to draw from a vast population. The Austrian Empire had a population of eight million in 1705 with the ability to create an army of a hundred thousand men. At the same time, France was able to create an army three times that size from a population of twenty million. Even Great Britain had the ability to draw on a population of ten million to press into service should the need arise. By comparison, Prussia had a total of 1.5 million people in 1700. For all these nations, except for Prussia, the standing army comprised less than two percent of the population. In 1740, when Frederick the Great inherited the throne, an army of eighty thousand men made up almost four percent of the population.[3] This population was also poor and uneducated. The noble

[3] Philip G. Dwyer, *The Rise of Prussia 1700-1830* (New York: Routledge, 2014), 14.

class of the Junkers, who had been the primary landowners for most of Prussia's young history, were described by their king as "dumb oxen but as malicious as the devil."[4] They suffered from illiteracy and could not compete in educational levels with other nobles in Europe, such as their Austrian cousins.[5]

Prussia was also at a disadvantage economically in Europe. Even though he had created the Prussian arms industry, Frederick William I could not make the industry self-sufficient with the key ingredients to produce the weapon of his time, the flintlock musket. Wood, let alone the iron, flints, and ingredients for gunpowder, had to be imported into the small state for assembly.[6] At the same time the primarily agrarian economy was facing hardship after Frederick I's overhaul of the Prussian military. The Thirty Years' War had decimated the German economy and for most of the seventeenth century the economy was depressed.[7] So was the strain on the economy that one of the reasons Prussian officers were encouraged not to marry was that the state could not afford to pay widows pensions.[8] Therefore, an economy that was centered around the state and controlled by it, was created by Frederick I as he consolidated power in Prussia.

The economy was therefore susceptible to fluctuation and bureaucrats who looked to advance their interests by taking advantage of the lower class.[9] But this economy was under the control of the state for use if the need should arise in wartime. In 1973, a conversation was introduced into the school of economics which relates to the Prussian

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[4] Hans Rosenberg, *Bureaucracy, Aristocracy, and Autocracy: The Prussian Experience, 1660-1815* (Cambridge: Harvard University, 1968), 59.
[5] Rosenberg, *Bureaucracy, Aristocracy, and Autocracy*, 59.
[6] Dennis Showalter, *Frederick the Great: A Military History* (London, Frontline Books, 1996), 98.
[7] *Rosenberg, Bureaucracy, Aristocracy, and Autocracy*, 33.
[8] Walter Dorn, *Competition for Empire 1740-1763* (NY: Harper & Brothers Publishers, 1940), 93.
[9] Rosenberg, *Bureaucracy, Aristocracy, and Autocracy*, 48-49.

state throughout its history. The conversation of "Guns vs. Butter," states that in order for a nation to give great attention to its military (guns), it must make sacrifices in the way of providing for its civilian population (butter).[10] The argument could be made here that Prussia was sacrificing the civilian economy in the way of class mobility, which would stunt economic growth, in order to keep a militaristic system in place. However, this system did have an advantage as argued by Hans Rosenberg, that the system was so centralized around the monarchy and king, after the Seven Year War, that only the king dictated the economic policy and his subordinates were only concerned with carrying out this policy.[11] The aim of Frederick I, was not to create an overhauled economy to which his efforts would detract form the national defense, but one that was efficient as possible.

Prussia also did not have the developed trade networks of other European nations, which created two major side effects. The first, and obvious effect, was that the economy could not reap the wealth of other nearby neighbors or access the resources of overseas colonies. The second was that naval power suffered immensely for multiple reasons. The greatest navies of that time, belonging to Britain and France, nations that also had overseas colonies, were also supported by large merchant fleets. These fleets were composed of vessels that could easily be converted into warships in times of conflict. This also gave the nations the benefit of not having to create a permanent standing navy, which was expensive.[12] The cost to build the most common ship of the time was approximately £5,000 in England which when converted into today's money, it equates to

[10] Jesus C. Curesma, and Gerhard Reitshculer, "'Guns or Butter?' Revisited: Robustness and Nonlinearity Issues in the Defense-Growth Nexus, in *Scottish Journal of Political Economy*, 533-41.
[11] Rosenberg, *Bureaucracy, Aristocracy, and Autocracy,* 53.
[12] In *Competition for Empire* Walter Dorn makes the case that Spain was greatly affected by this as it kept a standing navy which placed a high strain on its economy and hindered its ability to utilize overseas trade. Dorn*, Competition for Empire 1740-1763*, 102.

around 650,000 dollars. When compared to the nation's production and economic capability that ship becomes the equivalent of 77 million dollars, just to build.[13] Trade ships that could easily be converted into warships, were more cost effective as well as they could generate income for the nation in peacetime. It was for this reason that Prussia never needed or tried to develop a navy in the eighteenth century.

Frederick the Great's father, Frederick I, looked at Prussia in a unique way. "Frederick William I perceived Prussia not as a rival to Austria but as…the second-ranking power of the Holy Roman Empire."[14] William realized that Prussia was in a precarious position and the only way to survive was to create an army that none of the other powers in Europe could match. His son also echoed the same crisis by stating "Prussia is surrounded by powerful neighbors…You must therefore be prepared for frequent wars. Hence it follows that the military in Prussia must be given the foremost positions…"[15] The main difference between these two rulers was that Frederick I used his army as a deterrent to keep Prussia safe. His son, on the other hand, was willing to use the army as a tool to begin the expansion of Prussia, though he did not wield it recklessly as other German leaders would in the future. The question for both these rulers was the same however, how to make the Prussian army yield the same, if not greater, results than the armies of its enemies with all of the state's shortcomings?

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[13] Rif Winfield, *British Warships in the Age of Sail 1714-1792: Design, Construction, Careers and Fates* (Minnesota: Seaforth Publishing, 2007), 227. Values calculated from: "Five Ways to Compute the Relative Value of a UK Pound Amount, 1270 to Present," MeasuringWorth, 2020. www.measuringworth.com/ukcompare/.

[14] Showalter, *Frederick the Great*, 18.

[15] Frederick II, *Frederick the Great on the Art of War,* ed. & trans. Jay Luvaas (NY: The Free Press, 1966), 42.

To begin with one must understand, if briefly, the style of fighting in the eighteenth century. The predominant weapon for the average soldier of the time was standard amongst the armies of Europe, the flintlock musket and bayonet.[16] Therefore the warfare that resulted was much more reliant on the strategical maneuvering of armies looking to fight a small number of decisive battles that would force the other nation to the peace table, and even then the victor often failed to achieve their desired goals. These battles were fought at the tactical level which is where force multiplication is most often utilized and most effective.[17] Armies were expensive at this time and the destruction of an army in a day of fighting could leave a nation defenseless, especially a nation like Prussia. Battles that did not achieve this only led to needless deaths that did not advance the war goals of either nation. An army that was able to leave the field and fight another day was an army that could still inflict casualties and choose a new battlefield.[18] It was for this reason that Frederick wrote:

> …our wars must be short and lively, since a prolonged conflict is not in our interests. A long war gradually lessens our admirable discipline, depopulates our country, and exhausts our resources. For this reason, generals commanding Prussian armies should endeavor, however successful the affair may be, to terminate it promptly and prudently.[19]

In the Seven Years War, at the battle of Hochkirch, the Austrians inflicted a crippling defeat on Frederick and his army at which one third of Prussia's soldiers were lost.[20]

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[16] The flintlock musket fired a single shot with a large caliber ball. It was loaded from the muzzle in a lengthy process that had to be dedicated to memory in order to be efficiently executed.

[17] In his book *Art of Maneuver: Maneuver Warfare Theory and Airland Battle,* Robert Leonhard gives an easy to understand explanation of strategic and tactical levels of battle. Strategic planning involves the large-scale objectives of the nation or of the theater of war. The tactical level involves the actual battles and engagements. Robert R. Leonhard, *Maneuver: Maneuver-Warfare Theory and Airland Battle* (Ballantine Books,2009), 6.

[18] Showalter*, Frederick the Great*, 2-3.

[19] Frederick *II, Frederick the Great on the Art of War*, 140.

[20] Frederick *II, Frederick the Great on the Art of War*, 8.

After this battle Frederick fought a defensive war and though his battles ended in victories, he could not afford the casualties or go on the offensive.

The Prussians then had to create an army that was capable of dealing this knockout blow as quickly as possible. In this sense it is impossible to talk about the Prussian army in the 1700's and Frederick the Great without talking about his father, Frederick I. He realized Prussia's shortcomings and therefore proceeded to create an army that would make up for these disabilities. He also had a great effect on his son in his early years before he inherited the throne and the army.[21] The actions of his father have also brought the military ability of Frederick William II into question as well. In his biography of the king, Dennis Showalter walks a middle ground when evaluating the man. He gives him little credit in the way of originality but respects his ability to adapt under hardship. "Frederick's army was inherited, and he changed it little."[22] Luvaas' *Frederick the Great on the Art of War*, which examines the writings of the king, gives Frederick great praise for his military philosophy and ways of leadership. Because of his father's legacy in creating the Prussian army, the title of "the Great," has been approached with great praise or skepticism.

In this era of warfare, the implementation of force multipliers was most noticeable and effective at the tactical level. Drilling on the parade ground had a direct correlation to the battlefield in this era of warfare, due to the technology and the strategy of the time. The flintlock musket placed constraints on the troops due to its limited rate of fire and

[21] Frederick the Great and his father had a strained relationship and in 1730, Frederick even tried to flee from his father and was imprisoned. Tim Blanning discusses the relationship at length in his book *Frederick the Great: King of Prussia* (NY: Random House, 2016).
[22] Trevor N. Dupuy, *A Genius for War: The German Army and General Staff, 1807-1954* (Garden City, NY: Military Book Club, 1977), 15.

limited accuracy. Therefore, troops were massed into lines and columns on the battlefield to take advantage of volume of fire and mass charges that would result in melee combat to break an enemy line. Frederick I placed great emphasis on drilling his men, not only in maneuvers, but in shooting. The Prussian solder was given more time with his firearm, and more ammunition for practice, than most of the other European armies.[23] This honed their skill but also expended valuable resources. One method in particular, known as dryfiring, wore down the imported flints used in the muskets. Dry firing is a method of training still used today, in which an individual manipulates the firearm without any loaded ammunition. The practice is used to instill muscle memory when using the weapon under live fire conditions. This was a conscious decision made by the Prussian leadership that would pay off in future conflicts.

Another form of drilling that multiplied the effectiveness of the Prussian army was the manner in which they were deployed on the battlefield. Other armies chose to keep their men in close order, to boost morale or keep the army in good order on the field. Where his generals saw a liability in Prussia's reduced numbers, Frederick saw opportunity to create a more effective army. He did not create the new tactic of "oblique order," but by drilling his army to implement oblique order, he was able to make it an effective maneuver that threw his enemy off balance. At this time forces were deployed in line or column formations. The echelon attack took the line and turned it at an angle, with the line pointing to the place in the enemy's formation one wished to pressure. At an advance the formation would pivot as a door. If successful, the Prussian formations would roll across the enemy's flank.[24] The maneuver was not attempted by other armies

[23] Showalter*, Frederick the Great*, 105-8.
[24] Showalter, *Frederick the Great,* 108.

as it placed the force at great risk and in the chaos of battle was easy to throw off balance. Since the Prussian army could not afford drawn-out conflicts, they needed any edge on the battlefield. In his work on Frederick Dennis Showalter states:

> Frederick accepted the desirability of deploying an entire army by the perpendicular method. Here, however, he faced two obstacles. One was material: the growing presence of artillery on the mid-eighteenth-century battlefield. Battalions in column, one behind the other, particularly given the close Prussian formations, were sufficiently vulnerable…The other obstacle was institutional. Perpendicular deployment of more than a few battalions at the same time multiplied possibilities of confusion, particularly at brigade level.[25]

Frederick's solution to this risky maneuver was to drill his men so that they could execute it like clockwork on the battlefield.

Here Frederick was balancing risk with the shortcomings of his army. At the risk of destroying his army he trained it to be able to pull off a dangerous maneuver, in the hopes that it would lead to a knockout blow, thus shortening the conflict. This also relied on creating an officer corps that could lead the men through these types of maneuvers. Frederick himself stated, "colonels sometimes have decided the fate of the state," meaning that men at the low levels of the army had great responsibility and power to lead men in key moments of battle.[26] Therefore, he placed great emphasis on creating an officer "class" that took pride in the state, something that was not prevalent in Europe at the time.

For example, the French army was the polar opposite of what Frederick wished to accomplish. Walter Dorn in *Competition for Empire* stated that the French army had a "general relaxation of the military spirit among its officers," where Frederick "demanded

[25] Showalter, *Frederick the Great*, 111.
[26] Frederick II, *Frederick the Great on the Art of War*, 42.

better instruction, greater mobility, greater endurance…"[27] The French army greatly misused its officers and their deployment in the army. An overabundance of officers created a ratio of fifteen men to one officer, mostly from noble families who were awarded commissions on the basis of their aristocratic pedigree.[28] Colonels rarely quartered with their regiments and lived mostly in Paris or even Versailles. To them the military was a secondary activity to their title, a service that one had to perform when the time arose. Even then, many French officers in the field took with them elaborate staffs and baggage and servants, all of which would often interfere with the mobility of the army.[29]

Frederick needed an effective and trusted class of officers that could lead his army in battle. But he also needed officers that he trusted, to handle political issues back home with the state. Therefore, the economically weakened Junker class in Prussia presented a perfect opportunity for both the monarchy and the class itself. As stated previously, the middle class, including the Junkers, had been devastated during most of the seventeenth century by war and economic strife. Because of this, the monarchy also employed these men as government officials, to collect taxes, keep order, and fulfill recruitment orders.[30]

This also increased the efficiency of the economy as it created a military system in which these officials were taking orders rather than finding their own way to carry out the necessities of government. Prussia was pursuing an economic course with this action that differed from the rest of Europe. Rather than creating a capitalist economy it was

[27] Dorn, *Competition for Empire 1740-1763*, 85.
[28] In 1750 a royal edict decreed that one could become a noble if he was able to purchase a commission in the military. Dorn, *Competition for Empire 1740-1763*, 87.
[29] Dorn, *Competition for Empire 1740-1763*, 86.
[30] Dorn, *Competition for Empire 1740-1763*, 60-61.

creating a "civil service before it produced a class of enterprising capitalists" that could potentially clash with one another and create a sense of mistrust in the system.[31] This was a system with the sole purpose of being at the disposal of the government and monarchy. For most of the Seven Years' War, the Prussian state's treasury survived by accepting payments from Britain to keep funding the army.[32] The Prussian economy did not fail to produce goods and wealth, but not at a rate to keep Prussia out of the red. The infrastructure was never present to maintain the nation in war with income and goods, but this was not the main goal of the economy. The intended result that was achieved was that the only way for one to advance or to find success in Prussia was to place himself at the service of the state and thereby be ready to serve the state in time of conflict.[33]

This is also combined with the fact that Frederick despised true nobles of pedigree. Unlike the French, Prussian officers were quartered with their men, tied to them geographically since they were responsible for administrative necessities, and trained with their men. The Prussian army gave its officers control of more men in the field, as one officer commanded on average 37 men, which meant that there was a higher quality of officers and eliminated the trading of commissions as in France.[34]

By creating an officer class, Frederick's system could remain in place in Prussia beyond his years. Also, by having a group of men who were part of the officer corps and tied to the state, they would wish to see it improve and be maintained. Unlike the French model of duty-bound nobles who had to serve the state, this class of officers would be proud to serve the state and therefore be more effective on the battlefield. This class

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[31] Rosenberg, *Bureaucracy, Aristocracy, and Autocracy,* 57.
[32] Rosenberg, *Bureaucracy, Aristocracy, and Autocracy,* 324.
[33] Rosenberg, *Bureaucracy, Aristocracy, and Autocracy,* 62.
[34] Dorn*, Competition for Empire 1740-1763*, 86-87.

would also be able to hand down lessons from battle and facilitate the discussion for new ideas. The hope was that it would also avoid the issues of the French army in which nobles exploited the system, but by the end of the 18th Century this system would crumble and the class would firmly entrench itself as a clique in Prussia that would resist reforms.

Frederick himself sought to organize this group of men so that they would be more effective on the battlefield. Therefore, he would write pamphlets for them that would provide tactics, strategy and advice from other generals and strategists, that would describe his own experiences and define in his terms what it meant to be Prussian officer. "I write only for my officers. I speak only of that which is applicable for the Prussian service, and I have no other enemy in mind than our neighbors…"[35] The Prussians felt that in order to create effective officers, those men must take pride in serving the state. After the Seven Years' War, the relationship between the crown and the officer corps was truly cemented. As one author notes, "the officer corps became the embodiment of the spirit of devotion to the Crown and the state…"[36] Part of what made a good officer in the eyes of Frederick William II was an instillation of discipline in the men below him- in his own words:

> The greatest force of the Prussian Army resides in its wonderful regularity, which long custom has made a habit, in exact obedience, and in the bravery of the troops…Prussian discipline renders these troops capable of executing the most difficult maneuvers…The Prussians are superior to their enemies in constancy since the officers, who have no other profession nor other fortune to hope from except their arms, animate themselves with ambition and a gallantry beyond all test, because the soldier has confidence in himself and because he makes it a point of honor never to give way.[37]

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[35] Frederick II, *Frederick the Great on the Art of War*, 101.
[36] Gordon A. Craig, *The Politics of The Prussian Army 1640-1945* (New York: Oxford University Press, 1955),11.
[37] Dupuy, *A Genius for War*, 15.

Force multiplication is more than a nation's drive to strengthen its military through technological advancement. The army of Frederick the Great illustrates this in multiple ways including this method of creating a highly educated officer class and instillation of discipline. These are characteristics of other armies as well, but they were not pursued to make up for material deficiencies. The Prussian army was at a major disadvantage when compared to the nations surrounding them and had to make the most out of the manpower that it had available this included making the Prussian soldier as effective as possible, which meant giving him officers capable of leading the men through maneuvers and difficult situations. It also meant drilling and instilling in the enlisted man the duty to listen to these officers at all times.

This situation has led to great debate about the German mind and views on authority and militarism. After the Second World War and the horror of the Holocaust, many sought to explain how an educated nation could allow such an atrocity to happen. Some authors, such as Hans Rosenberg, believed that by implementing this military class, an unwavering respect of authority and order was instilled in the German mind by the time of the Second World War. In his exact words: "Prussia-Germany evolved into the most militaristic country of modern times because of forces that originated in the regimes of Frederick William I and Frederick II."[38] Others, some as F. L. Carsten, when examining the Junker class, contend that there never was a true military class in Germany, or one that lasted long term, therefore the Holocaust resulted from the gross moral negligence of the German Army and people.[39]

[38] Rosenberg, *Bureacucracy, Aristocracy, and Autocray*,41.
[39] F. L. Carsten, *A History of the Prussian Junkers* (Brookfield, Vt., USA: Gower Pub. Co. c1989).

Both Frederick William II and his father believed that, in order to lead the military and, by extension, the country, all power in the state had to be centralized around the monarch, especially military power. Frederick the Great wrote:

> It is important for the King of Prussia to rule independently. If a political system does not emanate from a single head, it can no more be established…The prince must design his system and put it into operation himself. Because his own thoughts lie closer to his heart than do the ideas of others, he naturally will pursue his plans with the zeal necessary for their success…All branches of the state administration are intimately tied together in one bundle: finances, politics, and military affairs are inseparable. Not one, but all of these departments must be uniformly well administered…A prince who rules independently and has fashioned his political system himself will not find himself in difficulty when he must make a quick decision…[40]

This mindset would carry great ramifications through German history. Frederick William II was one of Germany's first leading military and political heroes, who also advocated for the aggressive expansion of the state because he looked at Prussia as a state struggling for survival in Europe. At the time, Prussia's policies and strategies were born out of practicality. But as time progressed the meaning behind this drive of centralization in Prussia changed to show what one could achieve with a centralized state and the need to aggressively expand it. In particular, the unification of Germany coincided with the rise of social Darwinism, leading many Prussians and Germans to concluded that a state that was not aggressively asserting itself in military, political and diplomatic affairs via expansion was by necessity declining and faced extinction. Hitler and the Nazi Party would later emphasize this idea even more, adding the European Jewish population to the equation as an enemy to Germany's "healthy" military and political expansion. The Nazi

[40] Frederick II, *Frederick the Great on the Art of War*, 41.

party would idolize Frederick and Hitler would go as far to say in 1942 to the German people, "Today you again have Frederick's Germany before you."[41]

One of the best ways to multiply the effect of the Prussian force was with the weapons that they would employ on the field. Every nation that Prussia fought employed the flintlock musket and muzzle loading cannon. What differentiated these nations was how they chose to employ these tools on the battlefield. The formations that were used on the battlefield with this technology could be seen as the implementation of these weapons as well. Frederick did not seek to outpace his enemies technologically but to utilize the weapons at his disposal in the most effective way possible. This was partly due to the financial constraints of the Prussian state since weapons, especially artillery, were extremely expensive to manufacture before the advent of industrialism.

Prussia's industry was also not up to the standard of other powers. In one notable example, in 1756, the army ordered thirty new cannon barrels from a foundry in Berlin. The cannon would be made with a high content of copper, as the copper was available to be mined within the geographical boundaries of the Prussian state, as opposed to having to import English tin. The barrels produced were defective and unfit for military use as they were cast in a crude manner with cracks that would have led to catastrophic failure upon firing. The head of the foundry was imprisoned but it was quickly discovered there was no suitable replacement, so he was reinstated, and the barrels were recast at the foundry's expense in the same manner. The situation was repeated multiple times during Frederick the Great's reign as Prussia lacked the technological ability to cast cannons effectively. Rarely was the factory at fault for negligence or profiteering; rather, the

[41] Frederick II, *Frederick the Great on the Art of War*, 34.

process was at fault, and since the state was the largest, if not only, customer of these foundries, managers were open to replacing the faulty equipment at their own expense.[42]

Artillery in this time was also immobile and cumbersome but could make the difference in battle. Frederick realized this key factor and sought to make his artillery as mobile as possible despite these constraints. Early in his reign, Frederick William II began to experiment with different weights of artillery, in order to find the most effective solution for his army. Eventually he settled on a light artillery cannon that could be maneuvered around the battlefield but sacrificed the range and power of the heavier artillery.[43] Here again is another example of force multiplication, as the Prussians were sacrificing the range of their artillery so that they could make the effect of it felt throughout the entire battlefield. The other benefit to this choice was that it increased the effectiveness of the infantry through supporting fire and boosting morale in the ranks, as morale of the troops in battle is a key factor on the field of battle. Troops that are in good condition off the field are more likely to fight well on the field and also supporting weaponry also gives troops confidence in their position on the field.

Another weapon that the Prussians customized to their benefit was the standard infantry weapon. Since the flintlock presented a series of limitations for every army to plan around, Prussian tacticians sought to make the weapon more attuned to their purpose on the battlefield, to make the individual soldier and unit more effective. The official name given to the final version was the *Infanteriegewehr* M1782. This flintlock would eventually be dismissed by Carl von Clausewitz, Germany's prized strategist after the

[42] Showalter, *Frederick the Great*, 98-100.
[43] Showalter, *Frederick the Great*, 38.

Napoleonic Wars, as the worst musket in Europe.[44] At first appearance and evaluation, most would conclude the same. Yet when understanding the Prussian doctrine and need for force multiplication, the weapon is an almost perfect fit.

First, from a manufacturing standpoint, the weapon was made to compensate for the lack of German industry. The tolerances presented to manufacturers were so large that the weapon could be made by most foundries. The overall length could vary by 3 inches in some cases and the barrel diameters were off by 3 millimeters. Yet this was offset by the ability for the Prussians to employ more of these muskets to equip their troops in the field. If Prussian soldiers went into battle outnumbered by enemies, they would at least all have a flintlock, something that other poorly industrialized states like Austria or Russia could not provide for their armies. A deliberate sacrifice in manufacturing standards was made in order to equip all troops with a weapon for the battlefield.

Second, the ergonomics of the weapon, when looked at from a standpoint of marksmanship, were horrific. The musket was not a stable platform when raised to the shoulder and its stock was shaped in a way that almost prevented the soldier from firing a well-aimed shot. This fact, however, combined with the low tolerances of bore diameter, enabled the musket to be loaded and fired quicker. With the poor ergonomics the soldier was kept form taking the time to place a well-aimed shot and instead would focus on the preferred tactic, rapid fire and advancement upon the enemy. Perhaps the shot would not go where the soldier aimed, but he could fire more of them by loading and firing quickly, thus doing some damage, and he could also move while the enemy loaded their muskets more slowly. Armies in this time also used smaller caliber projectiles than the bore of

[44] Showalter, *Frederick the Great*, 332.

their weapon to negate the effect of fouling from black powder, as fouling effectively decreases the size of the bore with continued firing, a small caliber round can easily be pressed down the bore.[45] However, the tolerances of the M1782 increased this factor even more. The ramrod was also shaped so that it could be returned to its barrel sheath quickly, allowing for the user to reload on the move easier as this was a preferred tactic of the Prussian army to fire on the move and close with the enemy.[46]

The effects of all these factors served the Prussian army well on the field. In different instances the moving fire of well-drilled Prussian infantry was enough to cause panic in the soldiers facing them in the Silesian Wars.[47] By the end of Frederick the Great's reign the Prussian soldier had established a reputation for being well-trained and disciplined. Yet it had also created an atmosphere where one's only freedom was the "freedom to obey."[48] The economy had been weaponized by the state for war and its people subservient to the government. This was by no means a perfect system that allowed for innovation and growth of individual wealth, but it was the system that the Prussian state had to keep in order to be ready for the next war.

With a smaller army than the adversaries they faced, and a smaller economy, the Prussian army upstaged the great powers of Europe to expand its territory and place itself on the political stage in Europe a stage that it could no longer play the part of a secondary power content with the defense of its small territory. These conflicts also helped to cement the tradition of force multiplication in the German military. Prussian tactics were

[45] From personal experience, fouling quickly builds up in the barrel of black powder weapons due to the poor quality of the powder. The depositing of the left-over powder in the bore can quickly hinder the ability for the user to load another round unless they are using a smaller caliber to negate the effect.
[46] *Showalter, Frederick the Great*, 332-33.
[47] *Showalter, Frederick the Great*, 69.
[48] Rosenberg, *Bureaucracy, Aristocracy, and Autocracy,* 62.

seen as a success by later strategists and, as Germany continued to be pressed by the same circumstances, they were seen as a necessity.

Chapter Two: The Industrial Age and the General Staff

By the mid-nineteenth century the industrial revolution had made a great impact on Europe. The peacetime economy had been drastically changed by increased ease of manufacturing, redistribution of populations, and the development of social classes. The continent was experiencing the political effects of the Napoleonic Wars at the beginning of the century. The face of warfare around the western world also changed in this period, not only in technological advancement of weaponry, but in logistical support as well, with the development of the railroad and telegraph. It was during this time that two strategists arose to create a lasting legacy on the German way of warfare. One, Karl von Clausewitz, wrote one of the most famous books on European military strategy in history, *On War*, in order to summarize what the Prussian military had learned during the Napoleonic Wars. The second, Helmuth von Moltke, would study Clausewitz to apply his principles to the conquest of the states surrounding Prussia in the 1860s, thus becoming the military father of the united German Empire in 1871. Both considered force multiplication essential to the development of the Prussian military.

In the first stages of the Napoleonic wars, the Prussian army was not prepared for the tactics of Napoleon. By 1806, the Prussian army had become plagued with

bureaucracy and social climbers using the military, now a key part of Prussian society, to raise their status in the nation. In 1806, Prussia rushed into war with Napoleon and performed abysmally, though it had allies in Austria and Russia. Lessons from the opening phases of the battle would influence Moltke's preparation for the wars of unification. First, the Prussian mobilization was messy and incomplete, not even being able to draw forces from East Prussia. Second, there was no reserve which put the army into a field with a deficit of manpower. Then, the politically connected Duke of Brunswick took the field with the army and ran the army with an administrative approach and found the ability to make quick decisions in the field hampered by committee meetings giving him multiple opinions and the King's councilors from far sending ultimatums. Quickly, the western provinces of Prussia were overrun by Napoleon's armies. Few commanders could rally their men as they had no objectives to rally and combine their forces, only two commanders effectively continued the fight, Marshall Blücher, and General Scharnhorst. In short, with a couple of key battles Napoleon had effectively collapsed the Prussian army.[49]

By 1807, Prussia was forced to the peace table and succumbed to Napoleon's demands with the Peace of Tilsit. The army was placed under rigid restrictions, but the king quickly called for the forming of the Military Reorganization Commission. The purpose of this commission was twofold: to find out where the Prussian army had gone wrong, and to make a list of answers as to how to fix it. Leading this commission was Major General Gerhard Scharnhorst, who would be responsible for pushing through a series of great military reforms, along with a like-minded Colonel, August Wilhelm von

[49] Craig, *Politics of the Prussian Army,* 32-36.

Gneisenau. Serving as secretary was a member of Scharnhorst's staff, Captain Karl von Clausewitz, who had joined the army as an enlisted man in 1780 and fought his way up the military hierarchy.[50] The five members of the commission became known as the "Reformers." [51] The work of this committee laid the groundwork for a new Prussian military moving into the industrial age and, their system would bear its greatest fruition during the wars of German unification in the 1860s. Clausewitz would gain his fame by compiling the information and ideas from the meetings into his famous work of military strategy, tactics and planning , known as *On War*.

Clausewitz was writing in an era of emerging nationalism after the Napoleonic Wars. By the time Bismarck was ready to unify Germany and Moltke had taken charge of the General Staff, nationalism was center stage in Europe and the rest of Germany. *On War* is as much a case for nationalizing wars as it is a work on tactical planning and strategy. *On War* is actually the combination of eight books written by Clausewitz, each focusing on a particular subject in regard to war, from the attack and defense, to the nature of war and its relation to politics. War itself was "an act of violence intended to compel our opponent to fulfil our will."[52] It was also a "mere continuation of policy by other means" a tool in the political box that was to be used to the greatest effect to achieve an objective as quickly as possible.[53] Multiple times in his work he brings to bear that a reasonable objective is the destruction of the enemy's military force so that it may no longer continue the conflict.

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[50] Dupuy, A Genius for War, 20-23; Carl Von Clausewitz, *On War: General Carl Von Clausewitz*, trans. Col. J. Graham (Vancouver: Inflight, 1832), 27.
[51] Dupuy, *A Genius for War*, 20-21.
[52] Clausewitz, *On War,* 33.
[53] Clausewitz, *On War,* 47.

> …the destruction of the enemy as the true object of the combat, and we have sought ot prove by a special consideration of the point, that this is true in the majority of cases, and in respect to the most important battles, because the destruction of the enemy's Army is always the preponderating object in War.[54]

Clausewitz also made great distinction between the strategic situation of war and the actions taken on the battlefield. The battlefield involved purely limited objectives and the destruction of the enemy force.[55] The strategical part of war was to achieve the political aims of the war and capitalize on the victories of each successive battle.[56] To allow for these to be carried out efficiently both needed to be handled in sperate spheres, which was where the General Staff came in.

The most important aspect of this reform was that it allowed for a multiplication of force on the field and at the planning table, with the General Staff. The general staff was, in author Trevor Dupuy's words, to create an "institutionalized military excellence."[57] The goal was to work around the titles of nobility in Prussia at the time, in Scharnhorst's words:

> Normally it is not possible for an army simply to dismiss incompetent generals. The very authority which their office bestows upon generals is the first reason for this. Moreover, the generals form a clique, tenaciously supporting each other, all convinced that they are the best possible representatives of the army. But we can at least give them capable assistants. Thus the General Staff officers are those who support incompetent generals, providing the talents that might otherwise be wanting among leaders and commanders.[58]

This was partially due to Scharnhorst's own stigma of not coming from Prussian royalty and pedigree. After Frederick the Great died in 1786, Prussian army had fallen into the same situation as France had in Louis XVI's era at the same time. This was also

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[54] Clausewitz, *On War,* 215.
[55] Clausewitz, *On War,* 223.
[56] Clausewitz, *On War,* 157-58.
[57] Dupuy, *A Genius for War*, 24.
[58] Dupuy, *A Genius for War*, 25.

the legacy of Frederick's officer class of Junkers controlling the officer corps. Even though Scharnhorst himself was awarded a noble title during his career before being appointed to the commission, he was still shunned by many in the officer corps of Junker descent. This was also due to the combination of his outspoken ideas for the army and how it should change. At this time Frederick's legacy was not the many ideas that he placed for the Prussian army and strategy, but the idea that officers existed to "keep their soldiers subjected to the iron discipline."[59] The young Scharnhorst realized that this was not an effective use of Prussia's limited resources and population and that it needed to capitalize on young and ambitious officers like Gneisenau and Clausewitz who were capable of new strategical thinking.

Therefore, the German General Staff was born into existence, not to replace the leading officers, or to even lead the army in combat, but to facilitate the exchange of ideas. Also, it was to "serve as Prussia's top military planning, coordinating, supervising agency, thereby assuring the King that the Army was maintained in a state of optimum military readiness."[60] The Prussian army had also been drastically limited by the Treaty of Tilsit. The standing manpower of the army, officers and enlisted, was to be 42,000 and the nation could not create a national militia or rotate men into the army. It was also forced to provide troops and forced into an alliance with France. This also limited two major ideas of force multiplication Scharnhorst wished to implement as well in 1807. The first was a national conscription system that could create a reserve force for Prussia to keep on hand to be called up. By effect this also limited his ability to explore ways in

[59] Carsten, *A History of the Prussian Junkers*, 95.
[60] Dupuy, *A Genius for War*, 46.

which a reserve could be quickly called to action across the nation.[61] If Prussia wished to exercise its conflicts as quickly as possible it had to be able to put as many troops in the field as possible. Time is needed to train men for military service and a reserve of manpower to call on that had already been trained to a military standard could place more men at the disposal of the German military and all that would have to be done is to equip the men with the necessary equipment and send them to their respective units.

In 1813, the Prussians rose up against Napoleon in what would become known as the War of Liberation. Thanks to the reformers Prussia was able to mobilize an astonishing 6 percent of its population, putting close to 300,000 men into the field.[62] The army still struggled against the French but would not be defeated and with the help of European allies remove Napoleon from power in 1813, and aiding British forces at Waterloo in 1815, preventing Napoleon from reclaiming the throne. In 1814, the European powers met in Vienna to discuss how to reestablish the balance of power in Europe and to gain as much territory from France's defeat as possible. The previous German states were formed into the German Confederation and Prussia gained some territory.

However, there were misgivings in the military that Germany was still divided, especially after Prussia had emerged as a victor. These misgivings went as far as actual war plans with Austria in the hopes that the rest of Europe would stand by allowing Prussia to build Germany in the way it wanted, however King Frederick William III refused and intervened.[63] To those opposed to unification the ingredients for a unified

[61] Dupuy, *A Genius for War*, 22.
[62] Craig, *The Politics of the Prussian Army,* 60.
[63] Craig, *The Politics of the Prussian Army,* 66-67.

nation of a "powerful defense force, and…federal constitution" were not in place yet to facilitate the unification of Germany at Vienna.[64] It was clear that military was still not in the position to facilitate for the defense of a unified Germany after the Napoleonic Wars. This meant that moving forward that the Prussian army would have to become as effective as possible and closely tied to the drive to unify Germany.

This is the environment that Helmuth von Moltke was brought into when he rose to command the Prussian General Staff in 1857. Helmuth von Moltke had started his career in the Danish officer corps in a profession that had not been his first choice in life. When he entered the Prussian army, he retained his officer's title but entered at the lowest rank and worked his way up through the staff.[65] During this time he dedicated himself to studying Clausewitz' *On War.* Prussia was still coping with its overall poor performance in the Napoleonic Wars and the legacy of "The Reformers."

Moltke served in an age of rising nationalism, in which the military was necessary to the identity and survival of not just the Prussian state of Frederick the Great, but of a nation, a greater Germany. Moltke held this position when refuting the opponents of Prussia's inflated military budget.

> To be sure, one can sincerely regret that iron necessity imposes increased sacrifices for the army on the German nation. Nevertheless, we have become a nation at all only through sacrifice and work. The wish to save the enormous sums spent annually for the military system, to relieve the taxpayers from them or to utilize those sums for peaceful purposes, is undoubtedly perfectly justifiable. Who can deny that?...But we must never forget that the savings of a long series of years of peace can be lost in a single year of war…..I call attention to what the years of 1808 to 1812 cost our nation after an unfortunate campaign.[66]

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[64] Bran Vick, *The Congress of Vienna: Power and Politics After Napoleon* (Cambridge, Massachusetts: Harvard, 2014), 279.
[65] Helmuth Von Moltke, *Moltke on the Art of War: Selected Writings,* ed. Daniel Hughes, trans. Daniel Hughes & Harry Bell (NY: Ballantine Books, 1993), 2-3.
[66] Moltke, *Moltke on the Art of War*, 28.

Moltke therefore sought a new purpose for the General staff as new technologies emerged in Germany. This was combined with the fact that armies were now becoming larger than they had been in Frederick's time. In 1850, the standing Prussian Army was approximately 100,000 men, twice as large as the limited Napoleonic army and Frederick the Great's army. By the 1860s, the army had risen to a number of 300,000 men.[67] Moltke was quick to realize that the way to achieve an early victory in the field was to mobilize this army as quickly as possible.

It was in the strategic and tactical sense that Moltke became the embodiment of Clausewitz on the Prussian army, though he disagreed with the reformer immensely on the politics of war. Rather than war being waged for a political gain in mind, Moltke held the opposite true, that in war only war mattered, and that politics had to be shelved for that time to let the military do its job.[68] Where Moltke did agree with Clausewitz was that the aim of war should be the total destruction of the enemy force and to achieve this as quickly as possible. In order for this he realized that more freedom was needed on the frontline as "strategy grow's silent in the face of the need for a tactical victory."[69] Moltke would therefore pursue a policy which removed the political system as much as possible from the military and a military system that gave freedom to its commanders on the ground to maneuver and take advantage of opportunities on the battlefield to achieve the *one* goal, elimination of the enemy army. He would also utilize the technology of the time to multiply the effect of the Prussian army on the tactical level primarily but also at the strategic.

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[67] Geoffrey Wawro, *The Austro-Prussian War: Austria's War with Prussia and Italy in 1866* (NY: Cambridge University Press, 1996), 17.
[68] Moltke, *Moltke on the Art of War,* 7.
[69] Moltke, *Moltke on the Art of War,* 13.

During the wars of unification, with the implementation of the technology of the industrial revolution, the German military took more initiative to implement force multipliers at the strategic level. The telegraph, for example, allowed for the Generals Staff to multiply its command ability across the battlefield. It was not merely a way to transmit orders to armies but to assist the commanders in obtaining as much information as possible from each army, so that when the time came, a tactical victory could be turned into a strategical one.[70] This is what differentiated the Prussian Army at this time from the rest of Europe. It was also in the way that it utilized the new technology of the Industrial Revolution to make up for the shortcomings of the nation. Most nations in Europe still followed the strategies that were utilized by Napoleon at the beginning of the century. Napoleon's application of lines of maneuver for an army were still embraced by other nations in Europe as well as France.[71] The German history of the Franco-Prussian War refuted these beliefs stating:

> Armies of half a million of men can no longer be moved upon the principles which held good for those of a hundred thousand. France, as well as Germany possessed an enormously large army, but she did not understand how to make these masses flexible to unite them upon the decisive points, or to throw them quickly from one line to another.[72]

Instead the Prussians exercised, *Auftragstaktik,* mission tactics, that allowed for local commanders to exercise their troops on the battlefield without being tied down to the general in command. Originally this strategy was seen by other nations as reckless and risky, as without realizing the Prussian system, the maneuvers executed by these commanders gave the appearance of troops being exposed to be destroyed in small

[70] Moltke, *Moltke on the Art of War,* 113-14.
[71] Wawro, *The Austro-Prussian War*, 18.
[72] A. Nieman, *The French Campaign 1870-1871,* trans. Col. Edward Newdigate (London: W. Mitchell & Co., 1894), 9.

groups.[73] The Napoleonic wars had been conducted with complex systematic battle orders being handed out to every commander. Each unit was to have a specific part to play in the battle, making the general a micromanager of his forces.

To illustrate this, imagine a battalion commander with a thousand men at his disposal, his objective being a village. Under the old Napoleonic system, the commander would receive an order such as: "the battalion will advance down he southern road and will take the village and defend it until further orders." The general above the battalion commander will therefore have a sense of where the battalion is throughout the battle as the battalion commander, if he is a good one, will follow the orders to the letter. The freedom of the battalion is limited, but the commander has confidence in his plan and may also designate more battalions to the capture of the village, should unforeseen circumstances arise, and one become halted. The Prussian system on the other hand would issue an order to the battalion commander similar to, "the battalion is to take the village." The battalion commander now has the power to utilize his thousand men in anyway he sees fit to take the objective. The commander above him may have to rely more on the ability of the battalion commander and may not always be informed as to the disposition of the battalion, but if the battalion commander is a good one, he will accomplish his mission and capitalize on any advantage it affords him. That is what scared the Napoleonic commander, how could he not know where his units were at all times? How was he to put the plan in the hands of a lower ranking battalion commander who was less experienced than he, and to rely on only one battalion that could easily be

[73] Geoffrey Wawro, *The Franco-Prussian War: The German Conquest of France in 1870-1871* (NY: Cambridge University Press, 1996), 54.

overrun? At the same time, the Prussian commander could allocate the capture of the village to a single battalion with the flexibility to react to any unforeseen circumstances.

Moltke realized that even though the Prussian army was smaller or equal to its opponents by the mid 1800's, it still was a large force that could be more efficient on the battlefield. Moltke saw that the new abilities given to the army through technological advancements would increase the scale of the battlefield and allow the army to make up for some of its shortcomings like its size. Combined with a swift mobilization an attack of the whole army on a broader front would lead to an encirclement of an enemy army. First, the rapid mobilization would allow for the Prussian army to field more or as many troops than its opponents in the opening stages of the conflict. This would allow for the army to gain one of two advantages, to find suitable ground to defend, or attack the enemy army. Second, an early victory would force the enemy to call up its reserves in panic to react to the situation.

"Basically, each and every addition to the communications, especially to the railroads, must be considered a military advantage," Moltke wrote.[74] To him, railroads were one of the greatest multipliers that the Prussian army could use during the age of industrialization. In 1870, he continued his initial thoughts on the railroad, "The enormous influence of railroads on the conduct of war has unmistakably emerged int eh campaigns of the last decade. They enormously increase mobility, one of the most important elements in war, and cause distances to disappear."[75] In 1866, with the onset of the Austro-Prussian War, Moltke had to prove this worth to King Wilhelm I, who refused to mobilize Prussian troops against Austria. At this time Moltke wished to implement the

[74] Moltke, *Moltke on the Art of War*, 107.
[75] Moltke, *Moltke on the Art of War*, 108.

strategy mentioned above as Austria had a population of 34 million to Prussia's 9 million.[76]

When the time did come to mobilize in 1866, Moltke's plan was still able to formulate. First, the Austrians clung to the outdated Napoleonic tactics of large formations that would move in unison. The Prussians had adapted to smaller, more mobile units at this time which allowed them to mobilize quickly. Next, in the key sector of the front, the roads leading to Venice, the Austrians had deployed a force of 245,000 and were waiting for more troops to mobilize. In a week's time the Prussians were able to mobilize almost their entire army, 254,000 men, to open the campaign.[77]

Another key to this rapid mobilization was another force multiplier of the Prussians, a national educated reserve, something they had been denied during the Napoleonic Wars. This was how the Prussians planned to make up for their smaller population and army. In 1871, at the start of the Franco Prussian War, half of the French army had spent seven to twenty-one years in service. By comparison, the peacetime Prussian army only had career officers and noncommissioned officers (NCOs) with a short service term for enlisted personnel. However, this resulted in the ability for the Prussian army to call up 400,000 men who had already been through some form of military training or who had served in the army recently.[78] Unlike the French, the Prussians did not have to make the choice to keep men in service for elongated periods of time, and could instead keep a smaller army, which was less expensive, in service with a large reserve that could be combined with the rapid mobilization tactics.

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[76] Wawro, *The Austro-Prussian War*, 51.
[77] Wawro, *The Austro-Prussian War*, 52-53.
[78] Wawro, *The Franco-Prussian War*, 41.

In his book, *The Franco-Prussian War,* Geoffrey Wawro criticized this practice as creating an atmosphere of "relative amateurism" in the Prussian army.[79] This would be a side effect of the army, if it was not coupled with another force multiplier pursued by Moltke and the military. In 1868, a correspondent in Prussia wrote, "the Prussian Nation is the most enlightened in Europe, in the sense that education is diffused among all classes of society."[80] Forming a national education system in the German states had multiple purposes for the Prussian military. This served as a continuation of Frederick's belief that the population should be proud of the German state and therefore be more willing to serve effectively. Clausewitz had also advocated that "much pains may be taken to combine the soldier and the citizen in one and the same individual, whatever may be to nationalise Wars…"[81]

In 1848, revolution threatened the Prussian monarchy and the future of Germany. The revolution was quelled, and the Prussian monarchy now saw its army as its defense, not only against foreign powers, but against the growing tide of socialism.[82] This was also coupled with the growing belief in Social Darwinism in which survival of the state required its every statistical factor, economic, demographic, military or otherwise, to grow rather than remaining stagnant. The failed revolution has also been seen as a key point in German history and the *Sonderweg,* or special path, that it was taking in in comparison to the rest of Europe.

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[79] Wawro, *The Franco-Prussian War*, 41.
[80] Quintin Barry, *The Franco-Prussian War 1870-1871: Vol. 1 The Campaign of Sedan Helmuth von Moltke and the Overthrow of the Second Empire* (England: Helion & Company, 2007), 43.
[81] Clausewitz, *On War*, 163.
[82] Dupuy, *A Genius for War*, 55.

At this point, and following the 1848 Revolution, the idea of a German *Sonderweg* was touted as an accomplishment. Prussia had refused the ideas of the French Revolution which had driven Europe to war and enslaved Prussia to France.[83] After the Second World War, the revolution was interpreted as the small capitalist class, that was growing in Germany, as caving to the monarchy and old elitists that had been tied to the military.[84] Indeed the military had wished for an establishment of order in Berlin to quell the revolution and remove it by force. Even the junior officers echoed this sentiment including Moltke who wrote that "We now have 40,000 men in and around Berlin…Order in Berlin, and we shall have order in the country…They [the monarchy] now have the power…and a perfect right to use it."[85]

Another prevailing theory was that liberalism in Prussia was doomed to fail, as the movement was not unified and also influenced by the Prussian authoritative system. Some in the liberal movement felt that a parliament would weaken the Prussian state as it had in England and France, and the discussion of universal male suffrage was debated during this time, and would only be passed in 1866 when being introduced by Bismarck to upstage the liberals.[86] In 1848, the established power in Prussia of the monarchy and the army working in unison easily defeated the liberal movement for power, but it was not a total victory for the army.

One of the consequences of the 1848 revolutions in the German states was that several of them had adopted new constitutions, based on liberal rights and representative

[83] David Blackburn and Geoff Eley, *The Peculiarities of German History: Bourgeois Society and Politics in Nineteenth-Century Germany* (NY: Oxford University Press, 1984), Introduction.
[84] Blackburn and Eley, *The Peculiarities of German History,* Introduction.
[85] Craig, *The Politics of the Prussian Army,* 117.
[86] Blackburn and Eley, *The Peculiarities of German History,* German Peculiarities.

government. Prussia was one of these states. The new constitution organized the government into a Federal Council which the king was the President. This council had the power to levy taxes, and monitor trade, but it also was given power in military matters. Though the King had a deciding vote when there were ties, the council had the power to decide how the financial burden of the army would be placed, service requirements, and the power to fix the number of men in uniform during peacetime.[87] Yet while its constitution had quelled further violence and placated the middle class liberals and socialist who had tried to unite Germany in1848, it also challenged the makeup of the relationship between the Prussian monarchy, the Junker aristocracy and the military. Frederick had placed great emphasis on the military and had given it great independence in Prussia. Moltke challenged the new balance of power stating that, when under Frederick the Great, "The German army, under a single command, went from victory to victory."[88] Therefore, the military and Bismarck, who wished to see Prussia lead the unification of Germany, had a roadblock to overcome, the new constitution. The new constitution was a direct challenge to this power of the military as it established a new position in the government that had to communicate with the new parliament, the Minister of War. It was not the creation of this position, or the fact that the minister would directly report to the king himself, that worried the Prussian military. By reporting as well to the parliament, which now had the power to dictate a military budged, the Minister could bring scrutiny to the military. It was noted that this position "became the living embodiment of the fateful dualism which characterized the new governmental

[87] Constitution of the German Empire, Art. 60.
[88] Moltke, *Moltke on the Art of War*, 38.

system, and his required appearances before Parliament tended increasingly to provoke criticism of the Army…"[89]

This represented a cultural difference from Frederick's time of enlightenment. The centralized system he had created for the defense of Prussia was evolving with the times. The army still focused on multiplying the effect of its forces on the battlefield but now in an offensive capability. Bismarck wished to expand Prussia and unify Germany, which he would accomplish through a series of engineered conflicts.[90] This was clearly stated in his famous "Blood and Iron" speech in 1862:

> Germany is not looking to Prussia's liberalism, but to its power; Bavaria, Württemerg, Baden may indulge liberalism, and yet no one will assign them Prussia's role; Prussia has to coalesce and concentrate its power for the opportune moment, which has already been missed several times; Prussia's borders according to the Vienna Treaties [of 1814-15] are not favorable for a healthy, vital state; it is not by speeches and majority resolutions that the great questions of the time are decided – that was the big mistake of 1848 and 1849 – but by iron and blood.[91]

The Junkers were originally thrown by this declaration and in their party run newspaper, the *Volksverein* (People's Association), wrote that they wanted unification but "not in the form of the 'Kingdom of Italy' through blood and fire, but through the union of its princes and peoples…"[92] This drew great condemnation from others inside Prussia and Germany. After unification in 1873, a leading conservative in Prussia wrote, "God has permitted the desertion of our Junkers from the throne…and thus done severe

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[89] Dupuy, *A Genius for War*, 55-56.
[90] Author Hans Götz notes that: "When Prussian King Wilhelm I became the German Emperor on January 18, 1871, the German armies were deep in France…the end of the war was just a matter of time. Thus this symbolic act of German unification took place, so to speak, in the field." Hans-Dieter Götz, *German Military Rifles and Machine Pistols 1871-1945* (Pennsylvania: Schiffer Publishing, 1990), 8.
[91] Otto von Bismarck, *Bismarck: Collected Works*, ed. Hermann von Petersdorff, Trans. Jeremiah Riemer (Berlin: Otto Stolberg, 1924-35), pp. 139-40.
[92] Carsten, *A History of the Prussian Junkers*, 116.

damage…"[93] Frederick's dream of a united class for the state would now be shifted to an instillation of belief in the nation for the population.[94]

The Junkers still served in great capacity during the German wars of unification, but more emphasis was being placed on the lower ranks of the army to seize initiative's and wield more complicated technology. As author Quintin Barry states by the time of the Franco Prussian War,

> The military traditions of Prussia, and its recent spectacular successes in advancing the cause of German unity, had contributed to a widespread acceptance of military obligation, as did the sober, patient and obedient inclinations of the German people. All of these factors ensured that the raw material of which the Prussian Army was composed provided its leaders with a force that was unequalled in its ability to respond not only to the shock of combat, but also to the demands made by the new technology.[95]

Frederick had placed the emphasis on his colonels and battalion commanders as the ones who would change the course of battles and wars. During the wars of unification, the Prussian army, with its new strategy of mission tactics, placed the emphasis on the company commander as "the soul of the infantry…"[96]

The industrial age also gave the Prussian army the chance to make its infantry as effective as possible on the battlefield. Nations that were capable of industrialization were looking for ways to apply it to their militaries. Britain, the first nation to industrialize, focused on to enforcing its grip on the colonies and modernizing the navy to

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[93] Carsten, *A History of the Prussian Junkers*, 121.

[94] Carsten treats the age of Bismarck as the turning point for the Junker class. After going against Bismarck's plans to unite Germany through blood and iron, they were severely limited in their political power and presence in politics. The number of land-owning Junkers flatlined after unification as well, and the conflicts had impacted their role in the army. For Carsten the Junkers were no longer capable of mounting successful opposition in Germany after Bismarck, which would, in turn, contribute to the rise of the Nazi Party.

[95] Barry, *The Franco-Prussian War 1870-1871*, 43.

[96] Barry, *The Franco-Prussian War 1870-1871*, 46.

ensure the security of this empire.[97] The French at this point were neglecting their army compared to the Prussians with industrialization being for economic use. Napoleon III refused to plan for national mobilization utilizing France's railroads instead relying on the numbers of his army to carry the battle.[98] It would not be until the Great War that these nations would fully mobilize their industries for military goods rather than civilian needs. In Prussia, the same centralized system was still present and able to control the economy should the need arise. The government did keep an iron grasp on the arms industry and controlled every aspect.

The main technological development that the Prussian army focused on during this time was breech loading rifles and artillery. Hans Götz wrote on weapon development in this time and stated about the nineteenth century, "Too many new things filled these seven decades, for the development of firearms, characterized by slow, steady progress for centuries, suddenly rushed forward."[99] Black powder was still being utilized by armies at the time of unification but breech loading technology enabled the user to utilize the weapon in new ways. Even though these early rifles were single shot the ease of loading gave the individual infantryman the capability of rapid fire. It also enabled the user to load while kneeling or even prone, both of these being awkward and complicated to do with a muzzle loading firearm. Also, the breech loader brought about a new invention, the self-contained cartridge, which enabled the user to either carry more

[97] Lawrence James, *The Savage Wars: British Campaigns in Africa, 1870-1920* (NY: St. Martin's Press, 1985), 20.
[98] Douglas Fermer, *Three German Invasions of France: The Summer Campaigns of 1870-1914-1940* (Great Britain: Pen & Sword Military, 2013), 24-26.
[99] Götz, *German Military Rifles and Machine Pistols*, 7.

ammunition or carry it in less cumbersome equipment.[100] However, the issues of black powder were still present, especially fouling, which took even greater effect on breech loading firearms, making some countries reluctant to rush into development.

The Prussians, however, saw that the technology fit almost perfectly with their implementation of mission tactics, involving rapid and mobile warfare. The infantry was to be the embodiment of this warfare and Moltke outlined their role in this time.

> The combat power of the infantry rests on the effect of its fire. It success depends on attaining fire superiority and exploiting it decisively and rapidly. For that reason, individual marksmanship training is of the utmost importance.[101]

With industrialization taking hold in Germany, manufacturing weapons that fit with these ideals could be produced to effectively equip the army. Frederick had struggled with weapons manufacturing and industry in Prussia and therefore had to lower tolerances on his infantry weapons. With other nations using industry as a way to mass produce military items the Prussians chose to focus on quality.

This was seen as way to counteract the size of the army and allow for smaller units to spread out on the battlefield. The weapon that the Prussian Army settled on would be the grandfather of the bolt-action rifle. The Dreyse Needle gun was a breech loading rifle that operated with a manually rotated bolt. In the 1840s, the Prussian army approved this weapon for use and by the time of the Austro-Prussian War in 1866, the army and reserves had been equipped with and were trained with this weapon.[102] Despite

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[100] Flintlocks and percussion cap muzzle loading rifles sometimes would require up to three components for loading a single round. This also meant that the soldier had to carry these components in separate pieces of equipment. With a self-contained cartridge more room could be dedicated for the soldier to carry ammunition or other important equipment. It also gave the soldier more range of motion and flexibility. Stephen Manning, *The Martini-Henry Rifle* (Martin Pegler), 4-7.

[101] Moltke, *Moltke on the Art of War*, 154.

[102] Dupuy, *A Genius for War*, 76.

having a distinct advantage in volume of fire, the firearm did suffer from some setbacks when compared to the old muzzle loading muskets. Black powder still took an effect with fouling the mechanism and the distinctive needle that would pierce the cartridge was prone to corrosion as it was surrounded by burning powder when the rifle discharged. The early versions of the rifle, and most breech loaders of the time, were not sealed actions, as future rifles with smokeless powder had to be. When a soldier fired a needle rifle, the rifle was prone to expel gasses around the breech. This had two side effects, the first being the potential to injure the user with burning powder or at the least cause slight discomfort. The second was that the weapon was not able to generate as much energy to the projectile, thus reducing its effective range.[103]

The faith in this technology paid off in the Austro-Prussian War, however, when the Prussian Army was able to defeat the Austrian Army in seven weeks. A major contribution to this victory was the fact that the Prussian Army had been equipped with breech loading rifles while the Austrians still utilized muzzle loading muskets. The results were that the Prussians inflicted a casualty rate of five to one on the Austrians.[104] When discussing the Austro Prussian War, Geoffrey Wawro notes:

> Though only about one in every 250 Prussian bullets actually struck a human being and inflicted a wound – faster loading enabled Prussian infantryman to blaze away recklessly – 1-in-250 was apparently enough, and the ratio in no way diminished the psychological effect…With more than 200,000 intact troops after the disaster of Königgrätz, [in which 55,000 casualties had been inflicted]the Austrians were so demoralized by the incessant fire of the needle rifle that their officers advised an immediate armistice…[105]

[103] Manning, *The Martini-Henry Rifle*, 4-5.
[104] Wawro, *The Franco-Prussian War*, 51.
[105] Wawro, *The Franco-Prussian War*, 51.

The victory against Austria sent shockwaves throughout Europe, as Prussia had still been seen as a small power in Germany and not capable of standing up to another large power, such as the Austrian Army. The combination of the needle gun and the tactics of the Prussians had been a gruesome wake up call to the rest of Europe's armies. Nations that had not begun developing dedicated breech loaders began to research the technology, such as France, and those who had already started programs quickly accelerated their plans.

Moltke was not blind to this fact and wrote after the Austro Prussian War:

> In the next was our needlegun will not again be opposed by a far inferior rifle but, on the contrary, an entirely equal weapon. Superiority is no longer to be sought in the weapon, but in the hand that wields it.[106]

Therefore, whatever developments the Prussians made in weapon technology were small compared to the time spent in honing the system of warfare they had introduced. What was done however, was that the Prussians implemented breech loading technology to their artillery and focused on the quality weapons and developments. This was done by setting up state armories that would produce weapons for the military. The Prussians could have focused on quantity of rifles, but instead chose to cut back on production to provide the best quality with this new technology. Three of these royal factories were created and policed by the state Prussian Inspection Commission. In times of need however contracts were handed out to other factories. Though this system ensured quality, and increased tolerances for rifles, for the first time up to hundredths of millimeters, but it did have adverse effects on inventors brining new ideas to weapons manufacturing.[107]

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[106] Moltke, *Moltke on the Art of War*, 201-02.
[107] Götz, *German Military Rifles and Machine Pistols*, 40.

This issue was personified by the Mauser brothers who would go on to be the German nation's most successful gun designers. Born in Würrtemberg, and poverty stricken for most of their early lives, to the point they were not even granted citizenship in Oberndorf, where they worked, they spent their time experimenting with breech loading weapons outside of work.[108] The Prussian government wished to dictate as much as possible when it came to contracting and manufacturing new weapons. This included keeping contracts in the dark and payment dictated by the state with limited manufacturing rights. On top of this, most developments were classified as "government secret's" which further limited payment. On acceptance of their first military rifle, the Mausers almost went out of business as they were given a small gift and no manufacturing rights, limiting their ability to improve on their designs.[109] It was not until they could begin manufacturing weapons for foreign nations and the civilian market that they could open their own facility and continue their work.[110] Ironically, in the end the Mauser's most well known and successful design, the Mauser 98, would be delivered after contracting out previous versions to different nations and bringing back their improvements to the rifle. The "'red line' of Mauser's conception is shown especially clearly in the foreign models made…"[111]

The industrial age allowed for more goods and services to be open to the market and gave the opportunity for many to rise through acquisition of manufacturing property. Such was the case in Germany as the old Junker class was sidelined by Bismarck as he

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[108] Götz, *German Military Rifles and Machine Pistols*, 29.
[109] Götz, *German Military Rifles and Machine Pistols*, 40.
[110] Paul Mauser would go on to design the bolt action rifle that is still predominantly used today by militaries and civilians. Known as the Mauser 98, the rifle would serve through both world wars and gain a reputation as the dominant bolt action. Götz, *German Military Rifles and Machine Pistols*, 30.
[111] Götz, *German Military Rifles and Machine Pistols*, 108.

turned to this growing class in Germany. Contrary to the belief that the old elite had maintained their power in Germany, Carsten argued that the only way to truly progress economically in Germany during the industrial age was to take a stand against the old nobility.[112] For the German government, the Junkers held valuable land estates, that did increase their value in paper as land became valuable in nineteenth century Germany, but they stifled the progress of industrialization and were too opposed to Bismarck. The economy needed to be more sensitive to the needs of the civilian population during peace time and industrialization was the way to accomplish this. German politicians moved to decrease taxes on imported grain, hurting the Junker's main commodity. The focus was shifted to industry and any imported labor from foreign workers was designated for farm work. The German government had chosen to maintain the balance of guns and butter for the nation, yet with the changes in power they still maintained the ability to call this economy to war, though stifling productivity in peace time with the great government involvement in industry's that related to the military.

In between the Austro Prussian War and the Franco Prussian war in 1870, other European nations focused on the technological advantage of the Prussian Army. It was not fully realized that it was the way in which these weapons were employed on the battlefield that truly multiplied the effect of the Prussian forces. The most grievous offender of these lessons was Prussia's next adversary, France. The nation under Napoleon III did rush to develop a needle gun for their own purpose. They would succeed in adopting a rifle that was a worthy opponent of the Deryse. The Chassepot did have a longer effective range, and had a better projectile, based on the Minie ball, which was

[112] Carsten, *A History of the Prussian Junkers,* 126.

more aerodynamic and created a better seal with the barrel's rifling.[113] Wawro examined the French and their reactions and actions during the conflict in his work *The Franco-Prussian War: The German Conquest of France in 1870-1871* and was critical of the military. "What the French needed to do after 1866 was wed the Chassepot and the somewhat over-hyped *mitrailleuse* to new tactics that would fully exploit their features…"[114]

The French refused to accept other necessities for their army that the Prussians had exploited as a force multiplier. There was no reorganization of the command structure, or formation of a general staff. Little was done in planning for a future conflict, partially because of the lack of a general staff. France also lacked in training its men to utilize new equipment and refused to create a national reserve similar to the Prussians. Part of this was the fear of the Bonaparte royal family giving ordinary citizens military training.[115]

France also had little reason to pursue some of these reforms as it did not have the shortcomings of Prussia. France had a large standing army that had experience in warfare, and if needed a large population to call on through a draft to keep its numerical superiority. The Prussians, even in the process of unifying Germany, were still in a precarious position when it came to numbers of population. The Prussians also still had to face the threat of sharing borders with Russia, the Austrian Empire, and France. The French pursued weapon development as a reactionary measure to keep up with the times and utilized their industry to keep up with their opponents – in short, they relied on their

[113] Wawro, *The Franco-Prussian War*, 52-53.
[114] Wawro, *The Franco-Prussian War*, 53.
[115] Fermer, *Three German Invasions of France*, 24-26.

numbers to keep their army powerful and pursued in advances in technology to keep pace with other powers. The Prussian military, meanwhile, pursued advanced technology this as a way to make their infantry stronger when facing superior forces – in other words force multiplication was a necessity to maintain the state's territorial integrity.

The war with France went longer than the war with Austria, partially due to the technological advancement of France to equal that of the Prussian army. From July 1870 until February 1871 the two armies fought in eastern France, however, from November until the end of the war the Prussian army besieged Paris until finally forcing a surrender from the government. The decisive battle of the war had been fought at Sedan on the 31st of August, the French army was surrounded, and Napoleon III taken prisoner. On the battlefield the small maneuverable units of the Prussian army broke large French units into surrounded pockets that were destroyed or routed.

It was not until the results of the Franco Prussian War that nations in Europe started examining the structure of the Prussian army. Even though its focus was on its empire around the world, the British took great note of the reserve system and the type of leaders that Prussia (now Germany) allowed into the army. The first measure the British government undertook as a result was to form a national reserve system to replace its amateur militia that had been formed in 1859.[116] This measure was not taken in order to make the average citizen a trained soldier but to allow for a streamlining in calling up the reserves, and to "popularize service in the Regular Army, attract a better class of recruit, and reduce losses from desertion by doing away with the prospect that soldiers could

[116] David French, *Military Identities: The Regimental System, the British Army, & the British People c. 1870-2000* (Oxford: Oxford University Press, 2005), 11.

expect to spend most of their adult lives in colonial exile."[117] This also decreased the strain on overseas garrisons as troops could be rotated into and out of service with the reserves.[118]

The next measure for the British army was to eliminate the purchase of commissions. The British had sent observers to join the Prussian army during the war and had noted that even though many officers did belong to a single class, there were still many who had been unrestricted by birth to rise through the ranks on ability. The Prussians however held the stance that there was "no universal forms…rule [can not] take the place of talent."[119]They also noted the bond between officers and men, as they were tied to regions in Prussia rather than allowing officers to dictate their assignments.[120] The British were facing the same problems as the French had during Frederick's time in that officers were abusing their power of in the military. Initially, the army appealed to the government to end the practice, but legislation was rejected by the House of Lords, only months after France's defeat. Instead it fell to Queen Victoria to enact the order, after being directly appealed to by the reformers in the army.[121] These actions that were mirrored by other nations no longer gave the new German army a force multiplier and it would have to adapt if it wished to face off in another European conflict.

The issue for most European nations was the relation of Prussia's military to its government. Most nations in Europe did not share the same struggles or geographic position as the Prussian and German nation, and therefore did not see the necessity of this

[117] French, *Military Identities*, 13-14.
[118] French, *Military Identities*, 114-15.
[119] Moltke, *Moltke on the Art of War*, 124.
[120] French, *Military Identities*, 11-13.
[121] French, *Military Identities*, 16.

belief to amplify their military effectiveness. Some harbored grave feelings about the military and its relation to government. Even after their defeat in the Franco Prussian War the French were hesitant, both within and outside the military, to reform and create a national army with great power in the state. It did create a reserve and enforce mandatory service, but its strategic command level did not change. The French Army had commanded great power at the beginning of the century under Napoleon, lost that power, then rebuilt itself until suffering another humiliation in 1871. There was sentiment in France to build the military in the model of Prussia, as a "nation-in-arms," but the old guard of Napoleon III, which was not replaced after the defeat of 1871, wished to maintain a professional army as it had before the war.[122] The new republican government disagreed with this sentiment leading to the army to be treated as "an unwelcomed guest at a republican feast."[123]

Germany at the end of unification still had a need to focus on force multiplication. For other European nations, the need was not as great as it was in the German position or mind. France had shown that it did not have an issue of numbers with its population during the wars of unification, but a now unified Germany under one banner could bring new challenges. Austria-Hungary could easily have spent the money to modernize its military and pursue reforms, but instead it had too many internal issues to focus on, which took precedence over the army.[124] Russia's industrial capability was lacking and it too had internal issues that were beginning to take precedence. What was most concerning for these nations however and a point that is still debated, was the centralized

[122] Douglas Porch, *The March to the Marne: The French Army 1871-1914* (NY: Cambridge University Press, 1981), 1-2.
[123] Porch, *March to the Marne*, 1.
[124] Gunther E. Rothenberg, *The Army of Francis Joseph* (Indiana, Purdue University Press, 1998), 106.

command structure of the army, that at the same time, gave relative independence to field commanders.

At this point in warfare the Prussian army had pioneered the difference between tactics and strategy. The tactical level of their army was dictated by the contained space of the battlefield and the need of the individual soldier, better individual firepower for example, and the unit commanders on the ground. At the same time, it held true to its old principle of having a singular command structure for strategical operations. Moltke described the Prussian system as one that should center on the chain of advice.

> In most cases the commander of an army will not wish to do without advice. This advice may well be the result of the collective deliberations of a smaller or larger number of men, whose education and experience make them competent to judge correctly. But of that number, never more than *one* opinion must gain prevalence. The military's hierarchical organization must assist both subordination and thought. Only *one* authorized person may submit to the commanding general this *one* opinion. The supreme commander chooses that person not according to rank but according to confidence placed in him.[125]

Whereby he described other systems as:

> In a deliberative body, the pros and cons are explained with such good and incontrovertible reasons that the one offsets the other. The positive recommendation has against it the most undoubted drawback. The negation remains in the right, and everyone agrees to do nothing… The very first time something goes wrong they prove conclusively that they had "said so."… But the most unfortunate of all supreme commanders is the one who is under close supervision, who has to give an account of plans and intentions every hour of every day.[126]

Frederick had been the supreme commander in his time, while governing the state as well. Thus, this absolved him of any accountability from either, as he answered to no human authority. Yes, he had statesmen and generals who helped him rule these fields, but his decision was always final. With the growing separation of state and army, the

[125] Moltke, *Moltke on the Art of War*, 76.
[126] Moltke, *Moltke on the Art of War*,77.

General Staff, and Minister of War, were ways to keep this balance with the King in Germany, as the parliament now could be proverbial thorn in the side, and a perceived chain that could hold the army back. Generals already had enough responsibility with the lives of their men and the wellbeing of the state than to worry about "the fact that they may have to face a court-martial on the one hand or a civil court in Berlin on the other."[127] Therefore Moltke had concluded that "the only proper commander in chief in any country is the monarch, who in theory is not responsible, but who in reality carries the heaviest responsibility."[128] Moltke had effectively shut out politics from the war with France and the military had achieved spectacular results. The threat of a powerful government that could meddle in these affairs could have hampered military planning and its ability to create a strategy that would end conflicts quickly, without regard for foreign relations or political policy.

Kaiser Wilhelm I was then in a sense the perfect leader for the General staff. With the general staff being the pool of educated individuals, and the chief being responsible for delivering the sole opinion to the king, during the Franco Prussian War, the "king was available at any hour , day or night, to the chief of the General Staff for pertinent decisions.[129] In other words, the Kaiser listened to the army, he did not control it in a way that made it uncomfortable, or in a way that made it subordinate to the parliament in Berlin. For Kaiser Wilhelm the army had earned its place by protecting the throne of Prussia in 1849 and succeeding in defeating Austria and France. The General Staff had

[127] Moltke, *Moltke on the Art of War*,78.
[128] Moltke, *Moltke on the Art of War*, 78.
[129] Moltke, *Moltke on the Art of War*, 88.

even succeeded in alienating the chancellor, Bismarck, from the war as well as the Minister of War, leading Bismarck to label the staff as "demi-gods" to the king.[130]

The successes of unification would set the stage for the rest of the century and the build up to the Great War. The German army now had access to more land and citizens to place into service, as well as materials necessary for the expansion of industrialization. It would even be in a position to expand its overseas empire, though not to the ability of France and Britain. The paranoia that had put the Prussian military on this path had now subsided. Bismarck had also placed a system of alliances in Europe that would keep a check on the peace and prevent future wars.

However, the wars had also cemented outside views of German militarism. Abroad the Prussian state and the conduct of its military were criticized, for example during the Franco Prussian War, as little attention had been paid to civilians and property caught in the battle. It was believed that the war had "crippled France for thirty to fifty years."[131] At home, the aftermath of the wars and hostile opinions on a untied Germany would continue to justify the need to maintain a strong military. The social reasoning behind Social Darwinism had now been justified as well and would be cemented in German politics until the Great War and beyond. Officers, both senior and junior, would remain in the army to continue their careers on the success of these wars. Politicians who had backed militarism in Germany kept their power in the government. Even those who had gone against the military aired their apologies to save face.[132] A Bavarian statesman wrote about the atmosphere:

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[130] Gordon Alexander Craig, *The Politics of the Prussian Army 1640-1945* (NY: Oxford University Press, 1956), 204-05.
[131] Wawro, *The Franco-Prussian War*, 310.
[132] Wawro, *The Franco-Prussian War*, 312.

> I mingled with the crowd and was struck by the interest manifested by the lowest of the people in things military. No trace of the former animosity against the military which used to be noticeable among the lower classes. The commonest working man looked on the troops with the feeling that he belonged or had belonged to them.[133]

Wilhelm II would reinstate the paranoia of Germany's position in Europe by the end of the century. By this time other nations had learned the strategic lessons from the Prussian army and implemented them into their command structures, emulating the ability of the General Staff.[134] The wars of unification however would remain as a high point for Germany, an example of what the military was capable of and a showpiece for the future justification of a strong military. "An efficient army... is the only conceivable protection against the red, as against the black, spectre. If [parliament] ruin the army, then the end has come. Then *adieu* Prussian military renown and German glory!" one stateman would write.[135] The German historian, Friederichs Meinecke would uphold that Gneisenau, one of the founders of the General Staff, shaped Prussian with German ideals and ideas. "Only his German patriotism could lead him to believe that without his monarch's knowledge and approval he had the right to pursue an independent policy," he would write in 1906.[136] In his eyes the military reformers of the Napoleonic Wars had forged the German identity and started the road to unification. They had created "an atmosphere in which the free individual can breathe…in Germany it is due largely to the Prussian reformers."[137]

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[133] Craig, *The Politics of the Prussian Army*, 217.
[134] Wawro, *The Franco-Prussian War*, 306.
[135] Craig, *The Politics of the Prussian Army*, 221.
[136] Friedrich Meinecke, *The Age of German Liberation, 1795-1815* trans. Peter Paret & Helmuth Fischer (California: University of California Press, 1977), 105.
[137] Meinecke, *The Age of German Liberation*, 128.

Force multiplication had once again paid off for the Prussian military. The General staff had outwitted some of Europe's greatest powers. The technological edge of industrialization had wreaked havoc on the battlefields and brought lopsided figures in battle. Mobilization and the trained population had ensured that the conflicts were brought to a swift conclusion and that the German nation had rallied as one. In a race to industrialize and modernize, Germany had utilized its abilities in a new way from the rest of Europe to give its army the edge in battle. All the pieces that had been built under this strategy seemed to have worked and served their purpose. Justified and vindicated, the Prussian-designed military was now a key part of united German society and culture, attaching the traits of lopsided victories that had gone back to Frederick the Great as a national trait and ideal. Until the Great War the German army would continue to seek out force multipliers on the tactical level with new weapons and technology, but it would stagnate at the strategic level. The Great War saw a stagnation in the German military and its ability to revolutionize the battlefield in years prior. The Second World War however, would see a gross over exaggeration of the principle of force multiplication, on the strategic and tactical level, leading Germany to another crippling defeat, and ending the reign of the military in German society.

Chapter Three: The Disastrous Reliance

At the end of the Great War, Germany's defeat placed it in a precarious position. Its authoritarian monarchical government was dismantled, the economy was decimated, and the military was in a strange position. The war had been challenging for the army. The four-year conflict had proven Frederick and Moltke's warnings true against a prolonged conflict with the German situation. The German economy had not been able to sustain both the military and civilian population for the duration of the war, and the burden would not be easy to repair. On the battlefield, the navy had enjoyed limited successes, on the surface it had had the opportunity to face off against the British navy but rarely left port, and the new U-Boats had shown promising results against shipping. However, they could not be produced in substantial enough numbers to produce significant results. On land, the army had enjoyed success at the outbreak of the war and had pioneered new tactics at the end that lay the groundwork for the blitzkrieg tactics that would be central to their military successes in the early part of the Second World War.

The defeat also brought the discussion of German military power and the role the military played in the nation to the front of the discussion. The western allies realized how powerful the military had become in Germany and in German decision making.

They had also seen the threat Germany presented on the military stage, especially to smaller neighboring countries, which after the war were more numerous around Germany. Therefore, the allies tried to dismantle the German military as effectively as possible. This included disbanding the General Staff, or any similar organization, in the military.[138] It also limited the army to a size of 100,000 men and officers with no air force or armored vehicles. General Herman Balck wrote:

> Even though we (the German Army) were screened off from politics, we nevertheless were politically interested. Actually, we followed foreign politics quite closely, being concerned about our hopeless military situation. Here was our one hundred thousand man army facing armies on our borders numbering in the millions. Our enemies did not even have to mobilize. They easily could have squashed us with their peace time forces. Even the smallest mistake in politics could well have cost us our lives.[139]

The German military would later allow for the biggest political blunder in German history by siding with the Nazi Party as the situation in Germany deteriorated during the worldwide economic depression. Much has been written about the German military and its role during the rise to power. There were some in the military that agreed with the party and backed their demands and beliefs. However, the main mistake of the military during the interwar years of 1919 to 1933 was to segregate itself from the politics of Germany. Robert O'Neil wrote on the relation between the army and the Nazi Party:

> The German Army as distinct from a few of its leaders, had shunned the notion of active involvement in politics, in continuance of the traditions of the special relationship between the Head of the State and the Army which had existed in Prussia since its formation. This condition had been emphasized throughout the Weimar period, because of the troublesome times, and the small size of the Army, and by the personality of its commanders, notably Hans von Seeckt.

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[138] Dupuy, *A Genius for War*, 199.

[139] Hermann Balck, *Order in Chaos: The Memoirs of General of Panzer Troops Hermann Balck,* ed. & trans. Maj. Gen. David Zadecki & Lt. Col. Deiter Biedekarken (Kentucky: University Press of Kentucky, 2015), 146.

> Consequently, the German Army in 1933 stood before National-Socialism like a vacuum about to be unsealed.[140]

The German Army's commanders and planners became too preoccupied with its practical situation after the Versailles Treaty. Once again, the limitations of Frederick's time had returned to haunt the army. Even its institutions to create force multipliers had been stripped from it, including its officer academies and staff. Now, it had to also keep the peace in a tumultuous Germany with the newly established Weimar Republic. The Reichstag turned into a political minefield with multiple parties emerging in peace time. Among these were the extremist National Socialist and Communist parties.

General Hans von Seeckt took over as Chief of the Troop Office after the war. Seeckt was responsible for the route the German Army would take as the political situation in Germany grew worse. Seeckt took the position that the army was to be a "state within a state" as it came to be known. He ordered that all officers were to refrain from political involvement and concern themselves with keeping the peace in Germany.[141] Both sides in Germany, right and left, were struggling for control of the nation and forming groups of veterans and fervent individuals, threatening civil war. Each side knew that in any government takeover, or *putsch*, that they plotted, support of the military was key. Therefore, it was felt within the army that neutrality would balance the situation and cause criticism from both sides, keeping the army in the center.[142] When the economic crash of 1929 occurred, however it was too late to correct the course of the political situation. By segregating themselves and then hoping to keep the peace and enter

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[140] Robert J. O'Neil, *The German Army and the Nazi Party, 1933-1939* (NY: James H. Heineman, Inc., 1966), 62.
[141] Craig, *The Politics of the Prussian Army*, 384-85.
[142] Balck, *Order in Chaos*, 144.

diplomacy with the radical parties, they no longer had the experience, or the options, to restore democracy or the old monarchy.[143] Members of the old royal family were forbidden to have any involvement with the military according to the Versailles Treaty and Seeckt was forced to resign after inviting a member of the family to observe military maneuvers in 1926.[144]

The Army separated itself from the German political field and turned outward to combat its shortcomings until the Nazi Party became unavoidable. There were some in the army who saw that the party could provide some advantages. The party was outspoken about the need to remilitarize which most generals agreed with. The party paramilitary organization, the *Sturmabteilung* or S.A., was seen by some to be a unique opportunity to circumvent the Versailles limitations. In 1931, General Kurt von Schleicher, soon to be chancellor, approached the SA to broker an agreement that would make the organization an unofficial reserve arm for the army.[145] The deal was rejected but the party was not rejected in the long run. The army had been afraid to allow these radicals to become the base for the army in 1931 as many remained skeptical about the party's true intent. The chief of the army wrote in 1930, that the Nazis were "distinguished from the communists only by the national base on which they take their

[143] Craig, *The Politics of the Prussian Army*, 428.
[144] Craig, *The Politics of the Prussian Army,* 422.
[145] Dupuy, *A Genius for War*, 229.

footing…they therefore woo the *Wehrmacht.*[146] In order to use it for the political aims of their party, they attempt to dazzle us…"[147]

The 1932 elections were the tipping point for the army's decision on who it would back in the struggle for political control.

> The Weimar Republic ended in perpetual crisis. In the end the choice was between Communism and National Socialism. All other parties had ruined themselves and had no more support among the people…Democratic means were depleted. What remained was a choice between a military dictatorship and a civil war.[148]

Balck shared the illusion of the other staff members in the German army. The two main competitors in the election had been former general Hindenburg and Hitler. In the election Hitler had taken 13 million votes while Hindenburg had taken 19 million.[149] In the opinion of general and officer staffs, the party had simply become too large a threat to ignore and was the best choice over communism. Hitler also realized the opportunity that he now had to bring with the army on his side. Immediately after seizing the chancellorship in 1933, he voiced his upmost respect for the army and its institutions. He turned his attention away from the S.A., which was still calling for a radical takeover of the government.[150] The Night of the Long Knives cemented the route Hitler took take in Germany as he had the SA and His political opponents both within and outside the party

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[146] The *Wehrmacht* comprised the "regular" branches of the armed forces, the *Heer* (Army), *Luftwaffe* (Air Force), and *Kreigsmarine* (Navy). The SS was a separate arm that originated as a political arm of the Nazi Party, which also was then divided into a combat arm, the *Waffen SS,* that served alongside army units on the frontline. For further information see Stein's *Waffen SS* which examines the combat effectiveness of the SS and its foreign legions, and Weale's *The SS: A New History* for the formation of the unit and its ties to the atrocities of the Holocaust.

[147] Craig, *The Politics of the Prussian Army*, 433.

[148] Balck, *Order in Chaos*, 151.

[149] Dupuy, *A Genius for War*, 229.

[150] Craig, *The Politics of the Prussian Army*, 470.

murdered on the night of June 30, 1934. Now the army was reconciled to Hitler as its new political partner as the nation moved steadily closer to war.[151]

The *Wehrmacht* and its relation to the racial agenda of the party has also been a topic of great debate. As the war approached and progressed Hitler continuously removed generals from command who he found unworthy or too defiant, replacing them with men who could be controlled or were fervent supporters, such as Walter Model. After the war, many generals sought to dispel the myth of their devotion to the Nazi cause in their memoirs, or all together delete their involvements with the party.[152] The reason for this was to detach themselves from responsibility for the atrocities committed in the east, in which the *Wehrmacht* was greatly involved. At Nuremburg, Telford Taylor told the court:

> …the activities of the German Armed Forces against partisans and other elements of the population became a vehicle for carrying out Nazi political and racial policies and a vehicle for the massacre of Jews and numerous segments of the Slav population…the Armed forces supported, assisted, and acted in cooperation with the SS groups…[153]

The case could also be made that the Nazi racial agenda could be a way for the army to pursue the principle of force multiplication. In the interwar years, with concern focusing around the hopeless situation of the military's manpower and equipment limitations, the army would find little to gain by embracing this agenda for its own gain. The hope of creating a perfect race that embraced the ideals of a war-faring nation could

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[151] It is important to establish the working relationship between the German Army and the Nazi Party as pretext to the Second World War. The army, though physically limited, still held great respect in Germany and could have taken an active part in the events leading to the rise of the Nazi Party. For further information on this; Craig's, *The Politics of the Prussian Army,* Carsten's, *A History of the Prussian Junkers,* and O'Neil's *The German Army & The Nazi Party.*

[152] *Myth of the Eastern Front* discusses this situation in great detail and attributes this to creating a "Lost Cause" belief of the Eastern Front in which the German army was acting under orders and also defending the west from communism. Ronald Smelser and Edward J. Davies, *The Myth of the Eastern Front: The Nazi-Soviet War in American Popular Culture* (NY: Cambridge University Press, 2008).

[153] Ronald Smelser and Edward J. Davies, *The Myth of the Eastern Front*, 42.

be seen as a force multiplier in some context, but carrying this out would place a greater burden on the military than the possible gains.

Force multiplication is concerned with the practical application of proven ideas and technologies, usually to be employed as quickly as possible for the current conflict or next conflict. There was and is no evidence to support any of the racial ideas that the party wished to implement in Germany and the victims of this belief were the scapegoats of an evil party looking to find a "culprit" for Germany's failings. In 1935, over half a million Jews alone resided in Germany, and the party wished to persuade these individuals to leave Germany.[154] Second, the creation of this race would take generations of breeding, that would once again hamper manpower with the ridiculous policy of euthanasia which listed, "feeble-mindedness" and "severe alcoholism" as hereditary traits.[155] Finally, the implementation of the Holocaust strained the army even more as it now had to expend manpower to guard prisoners and give manpower to the SS to displace these victims. So, for the army to benefit from this it would have to place its belief in a pseudo-science upheld for political reasons, rather than science that could be applied to the battlefield, and give up manpower in the way of eliminating German citizens or carrying out the agenda, rather than finding a way to prepare the population for war as it had before the wars for German Unification

The army was not destined to be the worthy beneficiary of National Socialism and the intended recipient of this racial agenda. In the film *Triumph of the Will,* the bombastic propaganda film of 1934's party rally, the army was given little screen time. The film was meant to show how the party would continue the excellence of Germany and bring it

[154] Adrian Weale, *The SS: A New History* (Great Britain: Little, Brown, 2010), 156-57.
[155] Weale, *The SS,* 172.

into a new age. Instead, the film focused on the party organizations, including the SS, implying that the army was a thing of the past, something to be proud of, but it would be out-shadowed by the SS in the long run.[156] The SS would become a rival to the army as the war dragged on, competing for manpower in foreign lands, and pursuing its training and recruitment with its Nazi racial agenda. The army was only required to show unconditional loyalty to Hitler and the party; embracing the ideals of Nazism and racial purity were too extreme for most officers and generals at this point.[157]

Stefan Kuhl and Cornelie Usborne both discuss the racial agenda of the Nazi party and how they related to the drive for national defense. Kuhl argues that this belief was a function of the natural progression of German history, of *Sonderweg* Nazi ideas on race were focused on creating a strong German *volk* that would be feared by other nations, an idea which would certainly meet with approval with any future German military.[158] Usborne contends that the Great War was a wakeup call for Germany and its racial purity. Thus, the lost war would supercharge the rise of eugenics and racial agendas in Germany. Of course, with the defeat at the forefront of the military's mind, this too would have had approval in military circles.[159]

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[156] Ian Kershaw, *The 'Hitler Myth': Image and Reality in Third Reich* (NY: Oxford University Press, 1987), 68-70.

[157] This was shown in Italy after the collapse of the fascist government. Hitler decided that in order to maintain order he sent units that were "politically close to Fascism" therefore sending the SS not army units. George H. Stein, *Waffen-SS: Hitler's Elite Guard at War 1939-1945* (U.K.: Cerberus publishing, 1966), 214.

[158] Stefan Kuhl, "The Relationship between Eugenics and the so-called 'Euthanasia Action' in Nazi Germany: A Eugenically Motivated Peace Policy and the Killing of the Mentally handicapped during the Second World War" in *Science in the Third Reich* (NY: Berg, 2001).

[159] Cornelie Usborne, "Social Body, Racial Body, Woman's Body. Discourses, Policies, Practices from Wilhelmine to Nazi Germany, 1912-1945," in *Historical Research/ Historische Sozialforschung* 36, no. 2. (2011).

The German military had pursued force multipliers in the Great War and wished to continue on this for the next potential conflict. Seeckt faced the added burden of having to seek reform of the military within the limits of the Versailles Treaty, or without alarming the European powers of France and Great Britain. To Germany's advantage, and like only a select few other commanders in Europe, such as Charles de Gaulle, Seeckt recognized that the introduction of the tank into warfare meant the next war would not be fought in the same defensive terms as the last one. The Great War shaped most armies of the great European powers, for the future. France, for instance, embraced the defensive lessons of the war despite de Gaulle's beliefs and built the Maginot line - if war came with Germany again, they would engage in a "potato war" of attrition.[160] Seeckt and the German military instead looked to the offensive for how it could win another conflict.

The General Staff was a component that was seen as a necessary foundation for the future of army. Though it had been banned, Seeckt did lay the groundwork for its return by creating pseudo-offices in the high command that could easily be combined into a new staff.[161] In 1917 and 1918 the German army had developed and implemented stormtrooper tactics, which consisted of smaller mobile units of experienced men who could breakthrough parts of the enemy line and rapidly advance. In their final offensive in 1918 they had put

> 56 divisions through a rigorous three-week retraining program…men were divided into groups of seven to ten 'storm troopers,' under officers making decisions on the spot, not following a schedule laid down by generals in the rear. The groups darted forward, using gullies or other natural cover…and overwhelm

[160] Fermer, *Three German Invasions of France*, 169.
[161] Dupuy, *A Genius for War*, 216.

> artillerymen in the rear, who though themselves out of range of any infantry attack.[162]

This tactic had brought them initial success with the spring 1918 Operation Michael offensive, but the gains were not able to be consolidated due to logistical issues.

Armored vehicles were new in the Great War and proved to be a mediocre technology at best. Tanks had been an initial surprise on the battlefield but were unreliable and did not reach the battlefield in great numbers. In 1931 a staff officer was told by his commander, "You're too impetuous. Believe me, neither of us will ever see German tanks in operation in our lifetime."[163] The staff officer on the receiving end of this comment was Heinz Guderian, who would take the lead on developing the German armored strategy during the Second World War.[164] Along with other officers he realized that the technology was getting better and would enable the German forces to accomplish a rapid advance once again.

In the interwar years, German military strategists focused on this new idea in order to perfect the concept of rapidly moving armored warfare. Later in the war, German armor development would become more obsessed with perfecting the type of tanks being put into the field rather than fitting them to the style of fighting or for manufacturing efficiency. Guderian placed an emphasis on designing light tanks that could support an infantry breakthrough and in turn take the lead on an advance, with medium tanks in support to handle targets that light tanks could not. There was no need for a heavy tank to

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[162] Adam Hochschild, *To End All Wars: A Story of Loyalty and Rebellion, 1914-1918* (NY: First Mariner Books, 2011), 318.
[163] Heinz Guderian, *Panzer Leader* (Dehradun: Natraj Publishers, 1952), 25.
[164] Guderian was born into a military family in 1888 and served through the Great War. In the interwar years he would be part of the growing armored forces and be part of the circle of figures who would go on to pioneer the tactics that would later be known as *Blitzkrieg*. In 1944, he was appointed Chief of the General Staff until the end of the war.

be designed in great quantities. In the 1920s and 1930s, the military was forbidden from manufacturing these vehicles anyway, so when Nazi industrial production of tanks started in contravention of Versailles, the army needed as many vehicles as possible.[165] The strategy of utilizing tanks was also met with skepticism in the high command given the situation in Germany. Part of this was due from the former beliefs of the staff who had placed great emphasis on planning out attacks to minute details. General Ludwig Beck, who would head the reformed General Staff when Hitler came to power, told Guderian and his allies, "I don't want to have anything to do with you people. You move too fast for me…you can't command without maps and telephones. Haven't you ever read Schlieffen?" [166]

Once again, an emphasis was being placed on the abilities of the German officer in the field to multiply the efficiency of the units on the battlefield. In anticipation of rebuilding the army, it was decided that every man would be trained for the ranks two grades above their peacetime position. This was done for when the army grew to a size that was practical for the defense. When war started, the army would not be at a disadvantage with having to retrain peacetime men on their new roles.[167] There was intensive training for all those who entered service at this time. Though they did not have access to the armored vehicles they would use in combat, those chosen for service in the motorized divisions not only had to learn the mechanics but how to teach. Hans von

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[165] Guderian, *Panzer Leader*, 27.
[166] Guderian, *Panzer Leader*, 32. Beck was referring to Alfred Von Schlieffen, who created the famed Schlieffen plan mapping out a possible invasion of France before the Great War. He placed a great emphasis on minute detail planning down to the last man and train, limiting some of the freedom given to the lower levels of the officer corps in the field. Dupuy, "Chapter Ten: The Schlieffen Plan: Failure in Perfection," *A Genius for War.*
[167] Dupuy, *A Genius for War*, 216.

Luck, who would later go on to serve in the panzer divisions and lead them into battle, described the training process,

> We had to qualify for all the driving licenses, including that for track-vehicles. This was followed by intensive driving practice with cross-country journeys by day and by night as, well as a four-week course in our motor vehicle workshop. We then had to pass an examination and earn a teaching certificate.[168]

This level of training was not pursued by other countries in peace time. For the German army this was a way to not only prepare for expansion of the army, but losses that could be sustained in the field. A squad leader could easily take the place of a platoon commander, lessening the reliance on fresh replacements in the field. It would also ease communication as soldiers would be aware of the roles their superiors played in the system and how they in turn fit into the planning. On the technological side, soldiers could be interchanged, especially in the armored divisions, as they had learned all the necessary tools and how to teach them which would give a greater level of understanding and making soldiers interchangeable in their roles which could lead to a level of self-sufficiency. The Soviet Army for instance neglected to teach their crews on maintaining their vehicles at the outbreak of war, assuming this job could be left in the hands of technicians. During the opening phases of Operation Barbarossa, the invasion of the Soviet Union in June 1941, the Russian armored forces were hampered in their ability to launch counterattacks and abandoned many tanks due to mechanical issues that crews did not know how to fix.[169]

Two other issues with the armored advance had been logistics and communications, both of which were amplified by armored warfare. Fuel was now a

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[168] Hans Von Luck, *Panzer Commander* (NY: Praeger Publishers, 1989), 11.
[169] Alan Clark, *Barbarossa: The Russian-German Conflict 1941-45* (NY: Quill, 1995), 53-54.

commodity for mobile warfare and needed to be readily available to keep the advance. Guderian spent time to create a supply system in which German tanks could not only be fueled but rapidly. The army would have a limited supply of vehicles, and a possibly a smaller number than its enemies, therefore it would be effective to keep these vehicles fueled at all times. The French for example relied on a que system in which vehicles were to be filled one at a time from fuel trucks. Guderian spent time to create a system which constantly delivered fuel to the tanks on the frontline to be refueled by their crews as needed.[170]

Communication in the Great War had predominantly been carried out through wire communication, phone or telegraph lines were utilized for this. Wireless radio technology was becoming more popular in the military during peace time and utilized for armored vehicles to communicate to one another. One early solution to the communication between vehicles was similar to navy signaling. A command tank would use a series of pennants displayed from their turret to guide their unit in combat, or only a command tank could transmit to other tanks with subordinates only utilizing receivers for these orders.[171] Guderian realized that if the tanks were to be implemented effectively in force during breakthroughs communication was key. While developing the strategy it was decided that "Facilities for wireless communication from tank to tank that would function while the tanks were in motion were to be installed."[172]

In practice, a German column at the outbreak of war could act as a coherent unit on the battlefield with these force multipliers in effect. If a column of French tanks on the

[170] Fermer, *Three German Invasions of France*, 195.
[171] Fermer, *Three German Invasions of France*, 178.
[172] Guderian, *Panzer Leader*, 28.

move were about to be ambushed from the side and the command tank was unaware of the threat, his subordinates were limited in their ability to alert the rest of the column. A German column, on the other hand, had the ability to gather more information. A subordinate tank could relay the threat to, not only their commander, but to the rest of the column, thus enabling a faster and more coordinated response. Commanders also were given more freedom and were able to be more effective with the implementation of these radios. During the invasion of France, divisional commanders such as Rommel and Guderian were able to lead their troops while keeping pace with the advance utilizing mobile headquarters equipped with wireless technology. In one instance, Rommel was able to conduct an attack with his units while checking to the disposition of his reserves, in the process discovering an allied counterattack and rallying units to block the movement.[173]

The other advantage this brought to the German army on the advance was the ability to coordinate between branches. The air force, or *Luftwaffe,* had been built up during the interwar years with an emphasis on supporting ground troops. Ground troops trained with pilots in practicing coordinated advances and had created a system to effectively relay coordinates. The high command stating, "Army training exercises should be used as much as possible as Luftwaffe exercises…"[174] These attacks were not precise and would be woefully inaccurate by today's standards. The aim was not so much to destroy targets in close proximity to ground troops but to "produce a demoralizing

[173] Erwin Rommel, *The Rommel Papers,* ed. B. Hart, trans. Paul Findlay (NY: Da Capo Press, 1953), 30-32.
[174] James S. Corum, "The Luftwaffe's Army Support Doctrine, 1918-1941" in *The Journal of Military History,* Vol. 59, No. 1. (Jan. 1995), 60-61.

effect, which can be more significant" than damaging the target.[175] An allied commander reported the results of an aerial attack,

> The moral effect was greater still. The gunners ceased firing and went to ground. The infantry, cowering in their trenches, dazed by the crash of the bombs and the howl of the descending dive-bombers, lacked the instinctive reaction to fire back…Their only concern was to keep their heads down…they became incapable of reacting to the enemy infantry.[176]

Another force multiplier employed by the Germans to great effect in the beginning of the war was the successful implementation of airborne troops, designated as *Fallschirmjäger.* The idea of paratroopers was not a new one in the Second World War and Germany did not field the first paratrooper unit, but it was the first to deploy them in battle. The idea of an airborne force could be attributed to Ben Franklin in 1784 stating that "Ten Thousand Men descending from the Clouds" could do an "infinite deal of Mischief, before a Force could be brought together to repel them…"[177] The American aviator Billy Mitchell had intended to drop a small force of American troops behind German lines for the intended 1919 offensive, but the end of the war had scotched the idea. The Soviet Red Army created its own parachute unit in a simulated wargame in 1931 to deploy a small twenty-man force that effectively paralyzed an "enemy" force of 5,000.[178] By 1935, the first German *Fallschirmjäger* unit was formed in secret and put under the command of the *Luftwaffe* to maintain secrecy.[179]

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[175] On the German Art of War: Truppenführung, ed. & trans. Bruce Condell and David T. Zabecki (Colorado: Lynne Rienner Publishers, 2001), 201.
[176] Fermer, *Three German Invasions of France*, 188.
[177] "From Benjemin Franklin to Ingenhousz, 16 January 1784" *Founders Online,* National Archives, last modified June 13, 2018, http://founders.archives.gove/documents /Franklin/01-41-0310 [Original source: *The Papers of Benjemin Franklin,* vol. 41, *September 16, 1783, through February 29, 1784,* ed. Ellen R. Cohn. New Haven and London: Yale University Press, 2014 pp. 477-479].
[178] Franz Kurowski, *Jump Into Hell: German Paratroopers in World War II* (Mechanicsburg, PA: Stackpole Books, 2010), 1-3.
[179] Kurowski, *Jump Into Hell*, 4.

Originally, the mission of this unit was to conduct small unit raids behind enemy lines instead of being deployed as a large force to secure larger objectives. Kurt Student took command over the paratroopers and envisioned a larger role for the unit. He wrote after the war that he could not accept these "destroyer tactics" and that they were not a "completely satisfactory mission…for a soldier and for the force as a whole."[180] The unit also began to experiment with gliders as a way to move troops silently in the opening stages and to move heavy equipment. Again, the soldiers who joined this unit in the peace time era were involved in every facet of the implementation, learning every role that would be necessary when the forces expanded.[181]

The first operation of the airborne forces was in the invasion of Holland and Belgium when the Fallschirmjäger landed ahead of the advancing German ground forces. The operation was an ideal example of force multiplication. The airborne forces ability to land in an area that no one expected, with superior training and discipline, and with a small force, to accomplish an objective that would lead to large sweeping maneuvers, was what the German forces had been pursuing. The objectives of the operation were to take the fort of Eben Emael and the bridges along the Albert Canal, to prevent their destruction by the enemy to halt the ground troops. Most of the targeted bridges were secured with the defenders being overrun quickly by glider troops, and counterattacks failed to materialize as reports of German troops so far behind the lines caused confusion among the Belgians.[182] The attack on the fort was even more stunning. An American officer who analyzed the operation wrote:

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[180] Kurowski, *Jump Into Hell*, 7.
[181] Oscar Gonzalez, Thomas Steinke and Ian Tannahill, *The Silent Attack: The Fallschirmjäger Capture the Bridges of Veldwezelt, Vroenhoven & Hanne 1940* (Barnsley, South Yorkshire: Pen & Sword, 2015), 29.
[182] Gonzales, *The Silent Attack*, 181.

> Seventy-seven boldly led men, 10 gliders… and 56 hollow-charge explosives defeated 780 men defending the world's strongest fort…in somewhat more than a day, but the decisive struggle took place during the first 20 minutes.[183]

In this same study, the Americans concluded that if the Germans had tried to take the fort with only ground troops it would have taken 4,000 men and a week to break the line and cross the canal.[184]

The opening phases of the Second World War, the invasions of Poland, France, the Dutch countries and the Soviet Union, were where the German military stayed true to its principals of force multiplication and utilized them most effectively. The strategic centralization of power had balanced neatly with the need to allow independence for commanders in the field and allowed them to work flexibly around situations. The weapons and units that were utilized by the *Wehrmacht* fit the type of rapidly moving battlefields encountered by the troops. As the war dragged on however, both Hitler and the high command placed a large emphasis on force multipliers, especially technology related, to the point of gross exaggeration.

Even though it was pioneering advancements in warfare, the German military could not escape the fact that the Versailles Treaty had set it back in development and reserves for the outbreak of war. In 1938, Balck had taken stock of the armored situation and the estimated needs of the German armored force.

> I estimated that we would need three thousand tanks to conduct a successful operation, three thousand more to bring it to an end after two weeks of operations, and another three thousand to consolidate our gains. We would have to build for to five tank plants with a monthly capacity of 200 to 250 tanks operating one shift, and upon mobilization a second shift.[185]

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[183] Dupuy, *A Genius for War*, 259.
[184] Dupuy, *A Genius for War*, 259.
[185] Balck, *Order in Chaos*, 163.

This led him to the grim conclusion that the German army "had built a tank army without establishing the necessary tank production" and that the "tank force was hollow."[186] In 1933, a Soviet tank factory was capable of producing 22 tanks per day, while even in 1941 German production only reached a thousand tanks per year.[187] This represented the conundrum of the Nazi Party and planning for war alongside the German military as both were prepared for war, but domestic policy was not changed in order to meet the demands of war.

The war was not forced upon Germany like America with a surprise attack, rather the war was initiated by Germany and also planned for. On November 10, 1937, Hitler had called a meeting with the commanders of the *Wehrmacht* and laid out his plans for expanding Germany. Hitler put forth his resolution to expand the German state at the latest in 1943, but the military was to be prepared for action as soon as 1938.[188] Industry did not rise to the challenge and the issue was brought to debate at the conference. The commanders also debated that Germany would never be self-sufficient in natural resources to carry out a war by this time with other large European powers, namely France, but were dismissed. In peace time Germany was unable to become fully self-sufficient on key resources that were necessary for war. Iron, aluminum, and oil were mostly imported into the country. Germany had also faced a shortage of skilled labor after the Great War and with the rise to power of the Nazi Party, manpower was diverted

[186] Balck, *Order in Chaos*, 163.
[187] Guderian, *Panzer Leader*, 144.
[188] "Hossbach Memorandum," in *Documents on Germany Foreign Policy* (November 10, 1937).

away from manufacturing to public works and infrastructure.[189] This was also coupled with the fact that the German economy did not fully mobilize for war until 1942.

This was not another case of Germany simply not having the means or ability to fully industrialize, but the negligence of officials not putting the German economy on the war path. The theory of Guns vs. Butter shows that only the undeveloped country need to worry about defense spending having a significant effect on the civilian economy.[190] Germany was certainly not an undeveloped economy, and nations that are developed only suffer a deficit in their civilian economies when a willful decision is made to sideline the civilian economy during times of wartime crisis, even during the depression years many of the industrialized nations either willfully put more money into their civilian economies than militaries and those who did continue to fund military buildups, like Germany, suffered few side effects from the initiatives. In the past conflicts discussed the Germany economy had been prepared so that it could be easily converted for the defense of the state, and the case was the same in Nazi Germany.

Simply put the German economy was ready for war but the government simply did not call it to war until it was too late. German leaders wanted a swift and mobile war, which a fully mobilized economy should not have been needed and force multipliers could carry the weight, but when war came with the Soviet Union and the defeat in Stalingrad in 1942, the war began to shift to a war of attrition. The shift to guns came too late in the war and butter was still plentiful in Germany. Civilian goods were still produced beyond surplus and not rationed in Germany until this time.[191] Refrigerators

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[189] Larry T. Balsamo, "Germany's Armed Forces in the Second World War: Manpower, Armaments, and Supply," in *The History Teacher,* vol. 24, No. 3 (May 1991), 264.
[190] Curesma, and Gerhard, "'Guns or Butter?' Revisited."
[191] Balsamo, "Germany's Armed Forces in the Second World War", 271.

were still produced as well as civilian automobiles, in contrast, at the outbreak of war, America mobilized its entire economy for the conflict, ending production of civilian automobiles.[192] Due to this situation and policy decisions made by Hitler, the military therefore had to place a greater reliance on creating force multipliers even as the economy was being fully mobilized.

One of the first campaigns where these misconceptions had an impact was with the airborne forces and the invasion of Crete in 1941. It was believed that the Fallschirmjäger's could secure the Greek island after the allied evacuation of the mainland. Some in the high command did have their doubts about an entirely airborne operation and the necessity to conduct such a high-risk operation in the Mediterranean theater with the upcoming invasion of Russia.[193] It was determined in the end that the experience of the *Fallschirmjägers* and swift action would offset any advantage the allies had on the island.[194]

Crete would expose many shortcomings of the German emphasis on this force multiplier and its larger strategical situation. One shortcoming that manifested itself in that the German military was not unveiling a new tactic so the British forces on the island guessed that paratroopers would be employed in some fashion, since German naval power was lacking in the region to support a naval invasion. The allied commanders realized that the invasion would need to be supported by capturing the critical airfields on the island. Churchill himself redirected armored reinforcements to the island, since

[192] Balsamo, "Germany's Armed Forces in the Second World War," 272.
[193] Antony Beevor, *Crete 1941: The Battle and The Resistance* (NY: Penguin Books, 1991), xvii. & 7.
[194] Kurowski, *Jump Into Hell*, 73.

airborne infantry were vulnerable to armor.[195] These preparations resulted in heavy casualties for the German airborne forces but did not prevent the capture of the island.

This revealed another shortcoming, the numbers of highly trained men. The army alone had expanded from 100,000 men in 1933, to a size of 3,600,00 men. The highly trained men of the 100,000-man standing army now were irreplaceable in an army of fresh recruits. The parachute corps itself had expanded before Crete bringing in more troops who had never seen combat.[196] The casualties taken on Crete could not be replaced efficiently as every rank in the airborne was in danger. One divisional commander was killed on the first day of combat with multiple regimental commanders being wounded or killed in combat as well.[197] The Germans also lost a substantial amount of transport planes bringing supplies and reinforcements onto the island to salvage the situation which they also never recovered from in order to mount another successful airborne operation.[198] Martin Pöppel, a veteran of previous campaigns who would serve with the *Fallschirmjäger* for the rest of the war, wrote:

> The enemy had many more men on Crete than we did. Their numerical superiority had only been defeated by the unbroken spirit, the unbreakable will of all our men. But this episode was *not* a glorious chapter in the history of our supreme leadership; instead, it was a glorious chapter in the history of each and every fighting man…Our proud paratroop unit never recovered from the enormous losses sustained on Crete. For us, this was the last major airborne operation of the war.[199]

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[195] Kurowski, *Jump Into Hell*, 76.
[196] Kurowski, *Jump Into Hell*, 63.
[197] Klaus J. Peters, *A Pictorial History Fallschirmjäger Rgt. 3,* Vol. 2, The War Missions 1941-1945 (San Jose, CA: R. James Bender Publishing, 1995), 62
[198] USA. Department of the Army, Historical Division, EUCOM, *Airborne Operations: A German Appraisal-Historical Study,* by Hellmuth Reinhard, et. al. (Washington DC: Government Publishing Office, 1951), 67-71.
[199] Martin Pöppel, *Heaven and Hell: The War Diary of a German Paratrooper,* trans. Louise Willmot (Kent: Spellmount Limited, 1988), 67.

The war with the Soviet Union would bring about an even larger focus on force multiplication. Partially because of the balance of numbers during the war, this was a necessary measure. At the onset of the invasion, Operation Barbarossa, in 1941, the German army fielded three million men.[200] By comparison, at the Battle of Kursk, in one portion of the front, the Soviet Army was able to amass 1.9 million men.[201] The German army had doubled the number of armored divisions that it put into the field but this number was a hollow threat. After seeing the successes in the west by the armored divisions, Hitler ordered this increase personally, however, production was still not up to wartime speed. Instead of waiting for new vehicles to bring the division online, existing vehicles were taken from standing divisions, halving the effective strength. On paper the number of divisions had doubled but in reality, they retained the same combat strength.[202] Thus by the middle of the war the average German armored division was supposed to have 160 tanks at its disposal while an American division by comparison had 269 tanks and the comparable Soviet Tank Corps had 189 tanks but was usually combined with multiple "corps" to create a front.[203]

The issue was further complicated when the German forces encountered the new Soviet tank, the T-34. Originally it was thought that the superior qualities of the German panzer tank would balance anything the Soviets could counter with, as it had in the west. Guderian made note of this:

> The smaller number of tanks per division was compensated for, to a certain extent, by the fact that the old Panzers I and II had been almost completely replaced by Panzers III an IV. We believed that at the beginning of the new war

[200] Dupuy, *A Genius for War*, 269.
[201] Dupuy, *A Genius for War*, 273.
[202] Guderian, *Panzer Leader*, 138-139.
[203] Schilling, "The Organization of Armies," *Weapons, Strategy, and War W408,* http://ccnmtl.columbia.edu/services/dropoff/schilling/mil_org/milorgan_99.html.

> we could reckon on our tanks being technically better than all known Russian types; we thought this would more or less cancel out the Russians vast numerical superiority, for when the campaign opened out tank strength amounted only to some 3,200 units.[204]

Guderian had his suspicions however about the Russian tank developments. In 1941, a commission of Russian officers had been invited to review German tank production and were surprised to see the Panzer IV, a medium tank, to be the heaviest German tank in production.[205] The Soviet T-34 tank was not a heavy tank but it was designed for tank-on-tank combat rather than infantry support as the sole purpose.[206]

From here on the German armored doctrine became entrenched in a developmental battle with Soviet design. The battle of Kursk was the high tide of this race for "Qualitative Excellence" as stated by author Roman Töppel and an example of force multipliers driving strategical decisions. In 1943, the German army was ready to employ new tank variants, which it hoped would once again give it the perceived technological superiority over the Soviets. This was also due to Hitler's illusions of technological advantages and their ability to carry the day. He had taken to heart the numbers of these new machines that would be available for another great armored offensive.[207] Guderian challenged Hitler on his illusions stating, that the focus for tank production should be turned to the west instead of an eastern offensive that would consume more men and machines. He also explained that the new vehicles were still

[204]In 1941, the German armored forces were still being propped up by outdated models of tanks such as the Panzer I & II, as well as relying on numerous vehicles captured from other nations, such as the Czech Panzer 38 (t). This also complicated the logistics of the German army as it now had to supply the parts and other equipment to maintain these tanks. Guderian, *Panzer Leader*, 143.
[205] Guderian, *Panzer Leader*, 143.
[206] Balsamo, "Germany's Armed Forces in the Second World War", 267.
[207] Roman Töppel, *Kursk 1943: The Greatest Battle of the Second World War* (England: Helion & Company Limited, 2018), Chapter 1.

mostly untested in combat, were still prone to "teething troubles," and may be unable to reach the battlefield in significant numbers.[208]

Two of the vehicles that were part of this agenda were the popularized Panther and Tiger tanks. The Panther tank was a direct response to the threat of the T-34 and combined high speed with heavy firepower.[209] The Tiger had already been in development but sidelined by production priorities. With the coming of the T-34, it had once again risen to the top of the production priority list.[210] Production was already a hindrance to the German war effort but the designers of these tanks did counteract the problem. Per Guderian's warning, the early produced versions of these tanks at Kursk performed poorly on the way to the battlefield. Out of 500 Panthers available for the start of the battle, only 200 reached the front. On top of this, the vehicle had not been in service and the crews had not been able to receive adequate training on vehicle maintenance. The main issue with the vehicle was the transmission which required extensive repair away from the front lines if damage was sustained. In one week, one battalion saw forty of its seventy-one tanks in need of major repairs.[211]

These tanks did prove to be effective in combat, however. On July 6, 1943, an SS Division was in battle near the village of Prokhorovka. By the end of fighting that day the Soviet division had lost 110 tanks in combat. The German division lost one tank to an anti-tank gun.[212] These were the kind of results the Germans hoped would turn the tide of the war in the East. Yet Kursk would end in failure for the German army despite the kill

[208] Guderian, *Panzer Leader*, 307.
[209]Chris McNab, *Hitler's Tanks: German Panzers of World War II* (Osprey, 2020), Chapter 4.
[210] McNab, *Hitler's Tanks*, Chapter 5.
[211] Töppel, *Kursk*, Chapter 1.
[212] Töppel, *Kursk*, Chapter

ratios of these new tanks. Despite the propaganda reports of the time the ratio has been calculated that the Germans destroyed six Soviet tanks at the cost of every German tank. The Soviets lost over two thousand armored vehicles at Kursk and the Germans 350.[213] Despite this staggering loss, however, the advantage lay with the Soviets behind the lines.

The reason for the German Army's loss at Kursk had to do directly with force multiplication as a mindset. In their quest for the tank that could multiply the effect of their small armored force, the Germans suffered in their ability to keep these tanks in the field. The Panzer IV tank had already gone through multiple modification cycles before the battle of Kursk. Rather than focusing on improvements to in the design to streamline production, the German army was also working out the faults of the first batches of tanks and reacting to certain situations to employ these tanks all at the same time.[214] As author Chris McNab noted:

> Numerous changes associated with replacing seals and gaskets, changing bolt sizes and improving interior drive train components were of significant value in improving mechanical reliability. In some cases, it took several months to have a new modification incorporated on all new production Tigers, largely due to 'first in, last out' tendencies. This resulted from stockpiles of older parts being covered or buried by delivers of new parts which were therefore used first.[215]

He then goes on to list the different modifications to the Tiger tank, adopted in almost every month from April 1942 until October 1944. Some modifications were as significant as redesigning the turret in July 1943; others were as simple as changing the position of the headlight in December 1943.[216] Yet every time one of these modification was made to the Tiger's design, engineers had to change its designs and workers had to implement the

[213] Töppel, *Kursk*, Chapter 3.
[214] McNab, *Hitler's Tanks*, Chapter 5.
[215] McNab, *Hitler's Tanks*, Chapter 5.
[216] McNab, *Hitler's Tanks*, Chapter 5.

changes, slowing down production. In contrast the American Sherman tank had three "generations" through the war with a focus on keeping the vehicle in the field in large numbers.[217]

Despite the shortcomings of this system, the high command and Hitler placed an ever-growing emphasis on the technological embodiment of force multipliers. General Balck wrote that he had "always been of the opinion that superior weapons and equipment were worth more than good operational leadership."[218] In 1944 he was sent to command the last holdout in France, at Lorraine in the east. He and his fellow generals were told to hold out in order to refit the defensive line along the Rhine but also to allow for Germany to produce more wonder weapons including:

> An acoustically guided FLACK (Anti-Aircraft) projectile that would home in on the aircraft…New jet aircraft in sufficiently large numbers. Tanks with infrared target acquisition systems (night vision)…[219]

He concluded that "these new technologies were our last chance to thwart our enemies' inflexible intent to destroy us."[220] This drive was continuing to be monitored by the German commander in Chief.

The central system of power was the final force multiplier the German high command carried out, to the point of detracting from the *Wehrmacht's* effectiveness. Hitler had placed himself as head of the military as early as 1938, assuming the role of both the Defense Minister and Commander of the Armed Forces. He also created his own form of the General Staff that he would work with closely during the war, the

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[217] Steven Zaloga, *Armored Thunderbolt: The U.S. Sherman in World War II* (PA: Stackpole Books, 2008), Chapter 4.
[218] Balck, *Order in Chaos*, 376.
[219] Balck, *Order in Chaos*, 377.
[220] Balck, *Order in Chaos*, 377.

Oberkommando der Wehrmacht (OKW) or the Armed Forces High Command. This circle of commanders differed from the General Staff in the aspect that these were commanders that Hitler approved of and increasingly became susceptible to his control throughout the war, effectively replacing the General Staff by war's end.[221]

The purpose of the General Staff had been to take information and present it to the commander in chief of the forces so they could make an educated decision. At the beginning of the war the OKW had been allowed to do this with the successful early war invasions. Guderian and other proponents of mechanized warfare had been allowed to speak their minds about the operations in France and Hitler had allowed them to make the plans accordingly.[222] Some historians have put forward the argument, however, that Hitler always thought himself to be the master commander for the war and that his opinion was always best. One such was Gordon Craig who argued that Hitler's belittling of the generals had taken effect in by 1941 as though who had fought against the armored tactics were sidelined by Hitler.[223] Others propose that this belief began after the failed assassination attempt on July 20th 1944. Indeed as Ian Kershaw pointed out in his work *The Hitler Myth,* propaganda had been perpetuating this belief since the beginning and that as the war dragged on, especially around the time of Stalingrad, Hitler began to embrace the idea that he did know better than his generals.[224]

By the end of the war Hitler would either override his generals' decisions or surround himself with men who rarely questioned his judgement. After the invasion of Russia, he wished to send forces south to capture Russian oil fields while the generals

[221] Dupuy, *A Genius for War*, 276.
[222] Guderian, *Panzer Leader*, 92.
[223] Craig, *The Politics of the Prussian Army*, 501.
[224] Kershaw, *The 'Hitler Myth'*, 151.

argued that Moscow was the proper target. He let Guderian speak his case for the Moscow operation then declared, "My generals know nothing about the economic aspects of war." Guderian then noted, "I here saw for the first time a spectacle with which I was later to become very familiar: all those present nodded in agreement with every sentence that Hitler uttered…"[225] In the fall of 1944, Hitler had an idea to launch a decisive offensive, not in the east against the large Soviet numbers, or in the south where little could be accomplished, but in the west, where another Dunkirk could be achieved.[226] The generals cautioned against the offensive, then tried to preach caution in the manner by which Hitler wanted it to be conducted. The final decision was made by Hitler that the orders were not to be altered and that the Chief officers at OKW, Field Marshall Rundstedt and Model, were to simply pass them along to their subordinate commanders.[227]

The offensive was launched in December 1944 and became known as the Battle of the Bulge, ending in failure for the German army. In the end Hitler had believed that *he* was the force multiplier that the German military needed in order to win the war. A man with the power to wield the military at his will and whim, Hitler thought he who knew how to win the war. In the end, he did not prove to be another Frederick the Great, capable of multiplying the force of his army to carry the day on multiple fronts,

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[225] Guderian, *Panzer Leader*, 200.
[226] Antony Beevor, *Ardennes 1944: Hitler's Last Gamble* (NY: Viking, 2015), 80-81.
[227] Beevor, *Ardennes 1944*, 85. Gerd von Rundstedt was born in 1875 into a military family and served as a staff officer during the Great War. During the Second World War he was removed from command multiple times by Hitler but ended the war as commander of the Western Front. He was charged with war crimes but lived out his sentence outside of prison. Walter Model fought on the frontlines in the Great War and rose to become an officer. He gained fame in Russia in 1942 for thwarting Russian counterattacks and in 1944 commanded German forces against the ill-fated Operation Market Garden in the Netherlands. Model would not survive the war, committing suicide in 1945 after disbanding his army.

outnumbered and outgunned. The wonder is that under these conditions the German forces were able to hold out until 1945, spending almost 3 years on the defensive. Despite the collapse from the top, German units were able to maintain cohesion through the defeats until surrender.

For two hundred years the German military had pursued force multiplication in order to keep its military effective on the battlefield. From the conflicts of Frederick the Great, to the Second World War, this tactic was carried out to its bloody conclusion. What had started as way to maintain the security of Germany had evolved into a gross exaggeration. The economy had also been built with this mindset to be readily available to produce these force multipliers, whether in manpower or goods. Military planners and organizers came to believe that force multiplication could carry Germany through any conflict offsetting the economic disadvantages and grow the state. The power of a single command had been hijacked by a madman who used it to further his agenda for a nation. Technology was no longer a tool to be utilized efficiently but a crutch to prop up an army short on supplies and manpower. An economy that should have been mobilized for war as planned but thought to be unnecessary if force multiplication could win a war in a short and quick manner. The cycle was brought to a bitter conclusion by abuse as a way to win a war that could not be won.

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