

**Killing Private Ryan: An Institutional Analysis of Military Decision Making in  
World War II**

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Although much work has been devoted to the study of World War II, few have paid attention to the ways in which the structure of organization, and in particular, the differing incentives in dictatorial vs. democratic armies created systematic tendencies for success and failure on different margins. This essay is a first pass at applying the insights of the New Institutional Economics, especially the material on hierarchy inspired by Coase and Williamson, and expanded upon by Gary Miller, to non-market organizations. Such an application should be helpful in clarifying the characteristic successes and failures of the different armies induced by the structure of incentives of their organizational structure and political institutions. More important it will point the way to applying the modern theory of the firm to non-market administrative structures. No attempt is made to reevaluate the military analysis of the war. This work takes the consensus of views as to the conduct of the war for granted. Instead selective details are highlighted to produce patterns that should be of interest not only to military historians but to all who work on the political economy of organizations can be fruitfully, especially

those wishing to see the theory extended further.

It is the task of the essay to claim that many of the characteristic successes and failures of both leading Western Allies as well as Germany (and the Soviet Union) were not isolated instances of poor judgment, or good or bad luck. On the contrary, they were heavily influenced by the differing political pressures faced by the varied systems and the ways in which the different military administrations were organized to cope with such difficulties.

In particular I claim that the Western Allies, the Americans and the British, were less likely to be flexible than the Germans or even the Soviets on a variety of margins, precisely because they were democratic nations having to hold together an even larger democratic coalition. This caused any number of problems in the tactical conduct of the war resulting from gridlock to the necessity of making a variety of strategic compromises. In contrast, both the successes and failures most often attributed to Hitler and/or the General Staff were outgrowths of the highly dictatorial nature of the Nazi hierarchy. Contrary to what is often assumed, dictatorial structure provided a greater degree of leeway for individual initiative than in the West, but only if it could be reconciled with the clear cut desires of the Fuehrer. The lack of ambiguity regarding the final authority made formal hierarchy less of a limitation than in the West, making the German Army relatively less bureaucratic in practice than its Western counterpart. However, such a structure weakened the possibility of independent information provision to the leader and placed extreme burdens on Hitler's ability to coordinate, evaluate, and pay close attention to the details of the war. This again produced both examples of successful intervention but also spectacular failure geared to the preferences of the

Fuehrer. The German preference for flexible, tactical decision-making down to the squad level characterizing the doctrine of *auftragstaktik* was most effective because it functioned in a context of an unambiguous chain of command. It is likely that such a doctrine would not have been as easy to implement if the Army had been subject to the variety of pressures faced by a coalition of democratic nations.

I focus on the problems of weapons procurement and the problems faced by the Americans with the exclusive reliance on the Sherman tank, contrast this with the Germans and then show how contrasts in both the tactical and the strategic conduct of the war is consistent with a general theory of hierarchy derived from political economy and modern theories of the firm.

It is all too easy to assume that because the Allies won World War II, that their overall strategy was correct and victory was inevitable. But as Richard Overy has emphasized, victory was not a foregone conclusion as late as 1943, and certainly not such absolute victory as was witnessed in 1945. Moreover, the overwhelming success of the American effort has tended to make all but a few specialist historians take the quality of American efforts for granted.

Generally, the extent of American superiority in numbers is unquestionable. By 1944 the Americans were dramatically out-producing the Germans in every conceivable weapons category as well as in food, numbers of soldiers, support systems, and needed supplies such as fuel. By late 1944 U.S. production of airplanes and tanks was some five to ten times that of the Germans. While the German infantry was largely dependent on horse-drawn transport, both the Western Allies and the Soviets (who were supplied by

the U.S.) were fully motorized armies with hundreds of thousands of trucks, jeeps, armored halftracks and other motor vehicles. The Nazis also had to contend with a Soviet enemy producing an equally formidable amount of high quality tanks and an improving air force.

However, what is often not discussed today is the problem of the *quality* of American output. Given the American emphasis both during and since World War II on winning conflicts with minimal loss of human life, it is sobering to think that the American campaign in Western Europe was more of an attrition strategy than we would like to believe.

This was particularly so because of a number of complicating factors, which included America's late entry into the war and the initial lack of experience of her soldiers, as well as the need to invade Europe from the sea.

But if there was one single logistical factor which slowed the American advance and increased the casualty rate of the ground troops throughout the latter half of 1944 and into the winter of 1944-45, it was surely the inadequate condition of the standard American battle tank.

As early as 1944 the *New York Times* published a controversial article under the headline, "American Tanks Inferior to German?" The article maintained that because of the light armor and small guns characteristic of the standard issue M4 Sherman tanks, Americans could not defeat the best German tanks except on the basis of numerical superiority. In essence American soldiers were dying needlessly and continued to be vulnerable despite all the other American advantages because the U.S. did not have a weapon to counter the best German Panzers, especially the Panzer V Panther and Panzer

VI Tiger I and Tiger II tanks. An investigation followed which confirmed many of the worst suspicions aroused by the article. Furthermore, infantry morale suffered as a result of the fears aroused by this apparent inferiority. And, despite continued denials by many top Army leaders, including General Patton, the argument that the Sherman was something of a “death trap” has not been refuted to this day (Cooper, 1998).

Why did the U.S. not field a better tank? Was this simply a one-time mistake (albeit with rather deadly consequences) or a larger misjudgment deriving from systemic flaws in the American military? Or is it possible that there exists a way of rationalizing this story to argue that the American military behaved correctly under the conditions that confronted them at the time?

This essay is an attempt to deal with these issues through a consideration of the overall evidence and by appealing to the transactions cost analysis of hierarchy as a means of highlighting what still remains something of a paradox in military history.

### **Military Organization and Economic Theory**

It is not common to think of World War II in economic terms. In much macroeconomic analysis, data from the war years are often excluded from econometric regressions because of the belief that the nature of production during these years was of a different order than production in peacetime. Furthermore, to the extent that our assumptions about the underlying components of GNP presume that goods and services are exchanged at market prices, the widespread use of rationing and price controls in a quasi-command economy changes the relationship of prices relative to output in a market economy.

For analogous reasons, microeconomic analysis has not been heavily used with respect to military organization. The military is not subject to profitability constraints, has de facto monopoly power over the provision of goods for use by the nation, and can make use of coercive methods that a private company is barred from employing. Furthermore, the short duration of most conflicts would seem to work against the Darwinian equilibrium reasoning crucial to economic analysis. Nonetheless, the grounds for ignoring the economics of military organization and weapons procurement are not strong. Economists have made great progress in recent years applying the principles of price theory, with appropriate modifications, to the study of government agencies, which are also not subject to standard market pressures. In addition, the new institutional economics literature, following the lead of Ronald Coase and Oliver Williamson, has devoted itself to studying large business organizations that may be subject to market discipline, but are not the small, atomistic price takers in the standard textbooks. There is one other important reason why it should be a priori sensible to think about economic models when dealing with the military in wartime: Most of economics engages in “as-if” theorizing. No firm or consumer literally behaves exactly like the profit- or utility maximizing agent in the textbook models. Rather our justification for this is an evolutionary argument in which competition, particularly the threat of being driven out of business, provides a Darwinian sort of check on the sustainability of incorrect decision making. To the extent we as economists depend on such a rationale for our own work, the harder it becomes for us to dismiss the role of rationalizing checks on the military in times of war. After all, a firm may face losses or even bankruptcy, whereas a military organization that produces incorrect decisions faces the possibility of actual death,

destruction, and in World War II, the literal threat of annihilation. So while it is undoubtedly the case that there may be, and probably are substantive differences between the non-market production of arms and materiel in war from the production of goods for sale in peacetime, so long as we make allowance for the differing objectives, the logic of competition should still serve as useful guidance, particularly in such a long drawn out conflict as the Second World War.

Furthermore, the new economics of organization is especially relevant given the increasing number of case studies focusing on large organizations in a world with highly complex, often unique transactions, with many asset-specific characteristics. I cannot think of a single industry which so clearly matches these characteristics as that of arms production. I suggest that a proper understanding of military organization as highlighted in the case study at hand will provide us with important insights into any number of organizations, including the production of unique high technology, markets for highly differentiated services, and complex, highly idiosyncratic industries such as the market for big budget movies.

This paper will serve as a preliminary attempt to come to grips with this bureaucratic phenomenon by applying the concepts of the New Institutional Economics to an analysis of the military. More specifically I intend to use the framework for describing organizational behavior first developed by Gary Miller in *Managerial Dilemmas* as a means of highlighting organizational aspects of various puzzles in military history. I hope that the following can be seen as a type of case study which will throw light on long-discussed but little-understood problems. Ultimately I hope that this will lead to more thorough investigations to establish more precise hypotheses about

bureaucratic organization and its relationship to external politics and intended performance.

Let us begin from the central claim that needs to be explained in this study.

In brief: Americans had inadequate armored fighting vehicles for dealing with the Germans and suffered a great many unnecessary casualties as a result.

This hypothesis is quite commonly assumed in the literature on military history and weaponry (though not always unanimously). What has never been settled are the reasons for the phenomenon. For the most part, massive numerical superiority and an abundance of *materiel* served to camouflage the enormous inadequacy of the weapons used by the Western Allies (primarily the U.S., but including the British forces that often depended on supplies from the U.S.). The most common tank in the U.S. army and (along with the Soviet T34) one of the two most numerous designs in use during World War II was the Sherman M 4 tank. It served as the exclusive tank of the American ground effort for most of the war. It was also the central British armored vehicle in both its native state and in various modified guises. Its generally acknowledged strengths were speed, maneuverability, reliability, and easy repair. It replaced the even more inadequate early American tanks in use in North Africa such as the Lee and Grant Lend-Lease vehicles which were even more lightly armored and poorly armed. Above all, it was easy for the Americans to mass produce this standardized design allowing the American army to overwhelm the German forces through sheer numbers. These were

important considerations for a large army engaged in mobile warfare over a geographically large theater of operations.

Indeed, the German army had made use of this strategy during the first two to three years of the European war when speed and superior battle tactics enabled the Germans to triumph with the rather lightweight mix of tanks available in 1939 and 1940. Contrary to popular belief, the German tanks were not uniformly superior to those of the Allies at the beginning of the invasion of France. Initially, surprise, superior numbers, and the tactics of blitzkrieg enabled the Germans to win the war against French soldiers supplied with good heavy tanks that were inadequately used by Allied armies whose tactics had not been adapted to the demands of armored warfare. However, as the war went on, the Germans rapidly replaced the small, undergunned, and poorly armored Panzer I and II tanks with the larger and more powerful Pz III and Pz IV series tanks. Furthermore, the Panzer III and IV were constantly modified with heavier armor and more powerful main guns. Superior German tactics and gross incompetence on the part of Stalin and the Soviet army enabled the Nazi Panzers to triumph over numerically superior foes during the early months of Operation Barbarossa. However, in their basic form, even these advanced German tanks proved insufficient to deal with the newest generation of Soviet tanks first encountered during the invasion on the Eastern front, particularly the well-designed T34 medium tank and the almost impregnable though cumbersome KV-1 heavy tank.

The Soviet T34 was a real shock to the Nazi army in the Fall of 1941 because of its thick sloped armor (a critical innovation), good speed, and powerful gun in a package that was still light enough to be maneuverable and which could be mass-produced in

large quantities. Its low stance and wide tracks made it suitable for muddy or snow-covered roads. Its major drawback in its earliest incarnation was the lack of a built-in radio which severely hampered communications and coordination and the rather cramped space for passengers which hindered accuracy while fighting. The heavy KV-1, though less useful because of its slow speed and lack of maneuverability, was still dangerous in defense because its very heavy armor could not be destroyed from the front by any German tank in operation in 1941. Germans reported that shells from their Panzers often bounced harmlessly off the frontal armor of the new Soviet tanks. The first encounters with the new breed of Soviet tanks slowed the German advance in the crucial weeks leading up to the planned invasion of Moscow. Initially the Germans coped through excellent maneuver allowing firing at the sides or rear of the Soviet tanks at close range, superior marksmanship (at one point German gunners were even instructed to aim for the small view slit in the front of the KV-1 or other sensitive areas which would cause the tank to be disabled). Also crucial was the saving adaptation of the towed 88 mm antiaircraft gun as a field anti-tank piece, the only weapon in the entire German arsenal capable of reliably destroying Soviet tanks from a distance, and the most consistently valuable anti-tank gun of any army in the entire war.

The Germans quickly responded to the problem of superior Soviet armor through a number of new designs including development of the Mk. VI Tiger tank and the Panzer V Panther tank (arguably the best all around tank of World War II borrowing from, and improving on the best features of the Soviet T34), the creation and provision of more antitank units armed with heavier guns, the retrofitting of armor and improved cannon on the existing Pz III and IV designs, and the development of the lightweight *Panzerfaust*

handheld antitank weapons. The Tiger, though perhaps the most famous tank of the war, was not necessarily the best. It was a slow, heavy, and unreliable vehicle that often broke down under winter conditions. However, it was heavily armored and could brush off most hits to its frontal armor with ease. The Tiger was also equipped with a version of the superb 88mm cannon which was the most versatile gun in the entire war, serving in its towed forms as the principal antiaircraft and antitank guns of the German military. The long range of this gun coupled to superior tactics permitted the Germans to win many victories on the Eastern Front when they were outnumbered by as much as five to one.

The Panther was an all around great fighting machine. Medium weight, with good armor, and a sloping front that deflected shells, it carried a powerful though lighter gun than that of the Tiger. Still, this gun was adequate to knock out almost any Allied vehicle on both fronts. And its shells had good armor penetration due to the high velocity guns. The Panther was also maneuverable and reasonably fast for its size. It had extremely accurate firing controls and provided trained crews with the tools needed for a very high first-shot “kill” ratio. At the famous Battle of Kursk in 1943 where the Panthers were used for the first time, many were knocked out of commission with defective fuel lines and other flaws arising from the Panthers being untested. Nonetheless, the few that remained operational accounted for a disproportionately high number of German kills in what was the largest tank battle of the entire war.

It is fortunate for the Allies that both the Tiger and the Panther suffered from initial teething problems so that by the time the design had matured, Germany no longer had the resources nor the industrial capability of producing these weapons in large

quantities. Indeed, given the overwhelming success enjoyed by the German army in the initial months of Barbarossa (with the Soviets suffering losses through death or capture on the order of two *million* men in the first few months of the invasion), it is likely that a better equipped German military, especially one with improved tanks and adequate provisions for the winter would have successfully captured Moscow by late in 1941. Until the arrival of the new Tigers and then Panthers, the Germans dealt with the problem of the new Soviet armor by quickly increasing the gun sizes on the existing Pz III and Pz IV chassis, as well as increasing the amount of armor used for protection. Such modifications allowed the basic Panzer IV platform to be produced continually with modifications throughout World War II. And in its later versions, the Panzer IV was still superior to the lighter Shermans.

The Russians continued to refine their successful T34 design and did not sit still, increasing its size, engine power and armament, and building larger numbers in production runs that were growing to match American production of the inferior Sherman. All the while the Soviets worked on producing new and improved generations of heavy tanks to supplant the KV-1 and KV-2, leading eventually to the heavily gunned and armored Joseph Stalin 2 and 3 tanks with firing ranges comparable to that of the German Tigers and generally superior to anything available in the U.S. for many years after World War II. By the end of the war Soviet generals could count on experienced troops and officers, numerical superiority as well as a diversified range of high quality armor, ranging from the numerous T34 medium-tank variants to the heaviest JS-3s. Their major problems remained the poor physical condition of their troops, bad organization particularly command and control, and only gradual and uneven

assimilation of improved tank tactics under the guidance of Marshall Zhukov . To the very end, the Soviets relied on heavy attrition and the willingness to sacrifice disproportionately large numbers of men in frontal charges with little regard for minimizing casualties in the (correct) belief that they could eventually overwhelm German forces burdened by ever great logistic problems.

Thus, for the purpose of understanding the Nazi and Soviet weapons, there are no puzzles to sort out. The German army had access to excellent weapons that were modified as rapidly as possible when confronted by battlefield evidence requiring innovation. When later in the war the Germans were confronted with inevitable numerical superiority on the part of the Soviets and later the Americans, the Nazi high command reacted by commissioning limited production of ultra-high quality weaponry designed futilely but not unreasonably in an attempt to compensate for their smaller numbers. In the air this included the first regularly used military jet, the Me 262 and on the ground the almost indestructible though extremely cumbersome Tiger II tank. Even in small numbers the Tiger II proved difficult to overcome in both fronts and was more often plagued by the inadequacies of Germany supply which deprived it of necessary fuel and ammunition. Hence the heavy Tigers and Panthers, as well as their armored anti-tank counterparts, were rendered nearly inoperative in 1944 through lack of fuel or ammunition more often than by successful Allied confrontation, particularly in the West where air superiority served as the Americans' trump card.

Despite its limited run, small numbers of the lumbering King Tigers as they were also known, could prove extremely difficult for both the Soviets and Americans to handle, proving superior in Russia even in engagements when it was outnumbered three,

four or even five to one. On the Western front, the Tiger II was almost untouchable by any land-based Allied armor and the Panther and Tiger could be neutralized only with the greatest of difficulty. In many encounters, the bulk of German tank losses came at the beginning of battle, when unrestrained artillery fire rained down on the German positions and the Allied air fleet could bomb German positions with little opposition from the feeble Luftwaffe or at the end when outnumbered German troops often abandoned or destroyed equipment that had run out of fuel or ammunition (Zetterling, 2000).

The striking thing about the American situation is that, entering so late in the War, the U.S. should have known about and been responsive to this new generation of tanks, which had all been active on the Eastern Front at least a year before D-Day 1944. The U.S. had every opportunity to observe the course of battle in the Fall of France, the invasion of Russia, and the battle in North Africa where Rommel's emphasis on speed and maneuver allowed him to hold off the British with very limited support. Indeed Patton acknowledges learning much from the example of Rommel's tank tactics in North Africa, although he mistakenly assumed that the M4 Shermans' capacity to deal with the earliest Panzer III and IV tanks in 1942 and 1943 meant that the Shermans remained suitable against the latest German tanks in 1944. That this was a problem can be seen from Eisenhower's complaints in July of 1944 that American weapons were inadequate to stopping the German armor. Moreover, the U.S. military had known for over two years how powerful the German 88s were against tanks. (Reynolds, 1997, p. 33, citing Hastings, 1984). In December of 1944, Montgomery wrote that

The weight of any tank should not exceed 45 tons. Having selected the best possible gun as a primary weapon, and designed an engine with the required speed, then armour should be fitted: up to the maximum weight allowed.

Only the German Panther came close to matching this description of the “ideal” tank.

Despite the advantage of observing the course of war for two or three years prior to entry, the U.S. military often clung to outmoded notions of tank warfare including the dangerous notion that tanks should be used primarily in a support role for the infantry and not used to fight other tanks. In theory separate specialized vehicles, known as tank busters, like the Jackson armed with heavy guns but much lighter armor were to be devoted to killing enemy tanks. In practice, the tank killers proved inadequate to the task and tanks often had to deal with tanks. Armored warfare, as the Germans and Soviets had already learned, was best carried out by vehicles which were both heavily armored themselves and capable of knocking out enemy armor at a reasonable distance. Despite coming in late to the European theater of war, the U.S. made little or no adjustment to their basic Sherman medium tank initially insisting on its use exclusively in a support role. When the soldiers on the ground found out how hard it was to confront even the weaker Panzer IVH tanks, let alone Panthers and Tigers, makeshift methods were found to increase armor shielding on Sherman tanks in the field. The tanks eventually were produced with limited modifications such as a more powerful main gun or heavier armor. [The British did slightly better by retrofitting a large, accurate gun to a few Shermans for tank-busting purposes. These were known as Fireflies and were quite useful in combat,

but they were deployed in limited numbers and were spread throughout the army rather than used in concentration as was commonplace with the Panzer divisions.]

It is sobering to realize that till the very end of the war, the U.S. for all its technological prowess never produced a single medium tank that was anywhere near the equal of the powerful and versatile Panther nor the smaller but more cheaply produced Soviet T34. Specialists have, of course not been universal in their condemnation of the Sherman, several finding them to have various advantages. But almost all of the putative advantages were confined to speed, maneuver, and serviceability. The issue is not whether the Sherman should have been deployed but whether different armor should have been deployed to complement the small M4s. The claim that limiting production to the Sherman M4 tank and its variants maximized production flies in the face of the Soviet example. Though the Soviets also limited their production to a few designs to maximize output, the Russians were able to field both medium and heavy tanks to counter the German threat. Their total tank production was comparable or superior to that of the U.S. and most important of all, both the newer heavy tanks (Joseph Stalin 1s and 2s) as well as the medium T34 were qualitatively superior to the most U.S. Shermans.

Worst of all they delayed development and deployment of a U.S. tank that would have been capable of fighting on near equal terms – the M26 Pershing. However, U.S. standard doctrine discouraged tank to tank battles and continued to focus on armor as infantry support despite the adoption of blitzkrieg tactics by Patton.

Some writers have noted that American soldiers often spoke of a 6 to 1 rule of thumb when Sherman tanks had to confront the heavy German Tiger. This meant that untold numbers of soldiers were needlessly killed towards the end of the war. No

justification on the basis of sheer output could justify a policy of exclusive reliance on the M4. Nothing should have prevented the U.S. from fielding a mix of M4s and a few heavy tank units as was common for both Germany and the Soviet Union. It is also striking that the highest ranking Americans rarely paid much attention to the details of military production. In contrast, developing the best armor was a preoccupation of the top German Field Marshals, and was often overseen by Hitler himself who, for good and ill, chose to interfere at various times with the design and development of Nazi weaponry.

General Patton was prominent in his support of the Sherman tank as a superior weapon, but again primarily for its reliability rather than its power. He tended to dismiss the Tiger tanks as being unreliable, underpowered as transportation, and prone to service problems. He did not however, refute the fact that when confronting a functioning Tiger in the field, the American Sherman was nearly helpless unless supported by three or four other tanks attacking the enemy Tiger from the sides at very close range. The Americans did best when fighting at close range such as at Villiers-Bocage among the hedgerows or in the various engagements in small French towns.<sup>1</sup>

One famous report issued after the battle of Puffendorf maintained that standard armor-piercing shells from the Shermans “bounced off the front plate of the German tanks as if we were using pea shooters” while another added that “Our tanks are no damn good.” Such reports were eerily reminiscent of the German reaction when the early Pz III and Pz IV tanks ran into the fabled Soviet T34 and heavy KV-1. The difference is that the Germans responded swiftly to deal with the new threat. The Americans denied any

problem almost till the end. Indeed the one tank they did have which could deal with the Germans, the M26 Pershing was actually delayed and only reluctantly eased into service at the very end of the war.

Calculation of armor penetration levels suggest that the American tanks needed to get to within 500 meters of a Panther or heavily armored Pz IV to have a reasonable chance of a destructive hit. A Tiger I could not be harmed from the front even at close range and the Tiger II was almost impregnable even at point blank range. In contrast, even the lesser Pz IV tanks in use by 1944 could stop a Sherman at 1000 meters (cf. Appendices). At even greater distances, both the Panther and the Tigers could destroy their American counterparts at will. Furthermore, the tendency of even an indirect hit to cause a Sherman tank to burst into flames led some U.S. soldiers to refer to their tanks rather bitterly as “Ronsons” after the handheld cigarette lighter. The high profile of the M4 contributed further to its being an easy target for enemy gunners. Thus in any confrontation in which the Germans could locate their armor and guns in good defensive positions, a heavily outnumbered tank would usually take down two to four American tanks before being stopped. Only with the use of the high-velocity 76mm gun did the M4 become competitive with the Panzer IV late in 1944 while it always remained inferior to the Panthers and Tigers.

Even worse, a U.S. officer who made an early attempt to mount a better gun onto the Shermans and performed experiments to demonstrate its effectiveness against armored vehicles was actually punished for his private initiative (Ford, 1999). The use of a jerry-rigged large cannon was the basis for the British modification to the Sherman

known as the Firefly, and this hybrid remained a prized and effective weapon till the end of the war.

It is well-known that American tankers tended to claim that almost every tank they ran into was a Tiger, especially after an unsuccessful encounter [the confusion was increased by the fact that both the Panzer IV's and Tigers had squared off silhouettes, easily causing misidentification from a distance]. The fact that the Tigers and Panthers were available in smaller quantities than many eyewitnesses claimed actually testifies to their value [Zetterling, ]. But this speaks volumes about the psychological value of the weapon that even in small quantities, such great fear could be provoked in the minds of the opponents that fear of a Tiger often caused troops to hesitate even when their tanks outnumbered the Germans by ratios of as much as 10 or 20 to 1 (cf. Belton Cooper, 1998). In addition, the poor quality of American and British equipment and the resultant caution employed by the experienced soldier was interpreted by the Germans as reflecting on the quality of both the men and the machines.

A German report on the experience of the post-Normandy battles dated August, 1944 reads: "The combat spirit of our tank crews and their training in tanks are far superior to those of the enemy tank forces. The enemy's superiority derives only from the number of his tanks" (Sharp, 1998, p. 80). With regards to their Tigers, the major cause for concern was not the enemy armor but "enemy air superiority, well-directed artillery fire on point targets, and 9.2 cm (British 3.7 inch) antiaircraft guns" (Sharp, 1998, p. 80).

Even in mobile antitank weaponry the U.S. soldier was often inadequately equipped. The U.S. relied very heavily on towed antitank guns with little protection. No

more than a third of the American forces had armored antitank vehicles with guns at best slightly inferior to the standard 75mm used on the common German StugIII vehicles, and well-below the improved high-velocity 75mm guns carried by the newest Jagdpanther IV tank hunters.

And of course, no antitank gun was ever supplied to the Allies that was near the equivalent of the fabled German 88s.

The 88 is particularly instructive because it demonstrates the relative flexibility of the Wehrmacht. Originally designed purely as an anti-aircraft weapon, the 88mm towed gun was found to be successful at knocking out any tank very early in the war. It was light enough to be more easily towed than the heaviest cannon, but powerful enough to destroy even the most powerful Soviet tanks at long range. Almost instantly, the Germans transformed the 88 into their main anti-tank gun, and it became a feared weapon when used by Rommel's forces in North Africa [cite the Rommel victory with a dozen 88s and little armor against dozens of British tanks], and was virtually the sole support of the Germans on the Eastern front when confronting the early T-34s and KV-1 tanks in late 1941 and 1942. The Germans were said to have demonstrated the power of the 88 in open terrain when one German group used the gun to destroy a Soviet tank at a range of nearly 5000 meters. At anything under a thousand meters, they were virtually guaranteed a sure hit. During Operation Goodwood, a small German unit with a pair of well-placed 88s held off a large British armored force successfully, destroying some two dozen vehicles with minimal losses to themselves. And of course the 88s remained excellent anti-aircraft guns. No other nation came up with any weapon that was remotely as effective or flexible in destroying armor throughout the war.

Thus the American advantages were confined to huge numbers and excellent logistics, backed by a superb air force with total air superiority and an abundance of tank busting fighter-bombers which could attack the ground almost at will.

Even with the benefit of fifty years distance, it is frightening to imagine how much more serious the problem of Western casualties would have been if the German army had been equipped with sufficient food and fuel and if their best equipment could have been supplied in greater numbers, manned by troops of the caliber that first invaded the Soviet Union. And it is not fanciful to argue that many of the field casualties that were encountered as well as the costs borne by delayed victory could be laid at the feet of inferior weapons production as well as simple tactical or strategic error (Ellis, ).

I do not mean to suggest that with a somewhat better equipped army that the Nazis would have won. There is no question that from 1943 on victory was almost certainly beyond Hitler's grasp. The combined might of the U.S. and the Soviet Union was beyond the capacity of the Germans to overcome. But the U.S. ostensibly differed from the Soviet Union in designing invasion strategy so as to limit casualties, hence the inordinate reliance on airpower and heavy artillery bombardment prior to engagement on the ground whenever possible. However, given the eventual need to confront the Nazis directly, it is surprising how poorly American armor performed against the Nazi threat, despite America's overall technological and industrial prowess and manufacturing flexibility. Furthermore these problems existed despite the fact that by late 1944, the Nazis were mostly fighting with large numbers of lower quality troops including

younger teenagers, old men, and conscripts rather than the mass of front line veterans that had made up the bulk of the invading Army at the beginning of the Russian campaign.

One other piece of indirect evidence as to the quality of American tanks should be particularly telling from the economic perspective of revealed preference. The United States shipped tons of equipment to assist the Soviet Union in their war with Germany. U.S. shipped food supply was vital to Soviet provisions and close to one million American jeeps and trucks meant that the Soviets were more thoroughly motorized than the Germans. Nonetheless the Sherman tanks sent to the Soviets were routinely dismissed by the Russians and often relegated to supporting roles in the most serious fighting. Indeed, complaints about the quality of the American tanks brought suspicions that Americans were shipping Russia second-rate equipment (Glantz and House). In contrast captured T-34s were prized by the Germans who used them against the Soviets with even more deadly authority than the Soviets themselves<sup>1</sup>. Ditto for the heavier tanks and armored, so-called “self-propelled” guns.

This does not mean that Soviet materiel was perfect. Russian tanks were often crudely built and neither as reliable as the American equipment nor as refined as the best German products. But they were generally good designs that could be mass produced at a rate that exceeded German tank production even in the early years of the war. At a time when total German tank output was a few thousand a year, the Soviets claimed production levels of 2000 a month (late 1943). The major deficiencies of the Soviets

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<sup>1</sup> A report issued in the winter of 1941-42 urged the Army “without modifications, in order to accelerate improvement, immediately produce copies of the Russian 26 ton tank [T34] and employ intact captured 26 ton and 52 ton tanks” (Sharp, 1998, p. 45)

came down to poor tactics, gross incompetence at all levels, poor training, and problems of command and control in the early years stemming from the purges of the Russian officer corps prior to World War II which had deprived the army of many of her best trained officers. The general Soviet tactics were consistent with Stalin's (and Zhukov's) willingness to sacrifice millions of men for the purpose of overwhelming the Germans. For the most part the Soviet strategy relied on smothering the Germany army even at a cost in human lives lost that would have been simply unacceptable to any of the major Western allies. [Cite Von Mellenthin on his views regarding defense vs. the Soviets; and the erroneous German belief that eventually even they would tire of losing hundreds of thousands of soldiers. Cite especially his observations that the Germans could routinely win encounters when outnumbered by ratios of 2 or 3 to 1.] However, the enormous losses sustained by the Soviets also served as a form of training so that by the time of Operation Citadel (the Battle for Kursk) in 1943, the general level of Russian tactics and strategy had greatly advanced.

Western readers are well aware of the enormous losses to the German army suffered at the siege of Stalingrad. Most are unaware of the fact that the Russians had lost several times as many men due to a failed Northern offensive (Operation Mars, cf. Glantz, 1999) and vicious fighting in the South in the months leading up to Stalingrad and would lose many more men in various offensives afterwards. Even great victories recorded for the Soviets came at a loss of lives which would have been treated as a tactical defeat in the West. At the famous battle for Kursk – the largest tank battle in history – the Russian victory was essentially strategic in that the last major Nazi offensive in the East had been halted. In men and equipment, it had most likely been a

tactical victory for the Germans with hundreds of Soviet tanks destroyed and thousands of men killed or captured. Only the fact that Hitler could not afford the German losses in soldiers and tanks while Stalin was seemingly prepared to lose the lives of ten times as many soldiers to defeat the Nazis, and could easily replenish the lost tanks, which made Kursk an important turning point on the Eastern front.<sup>2</sup>

Thus, we come to the puzzle stated at the beginning of this essay. Given what was known at the time about armored warfare, and given the subsequent course of events which the Americans and British observed from the Eastern Front up to and beyond the invasion of Normandy, what is the appropriate rationale for explaining the American inability and/or unwillingness to field better tanks and related anti-armor equipment?

Part of the answer is that the U.S. may have had an easier time tolerating large casualties [in terms of economic opportunity cost ] than later on. I wish to emphasize that this is not a claim that the Americans were as indifferent to casualties as Stalin but rather that they were less constrained by public opinion than in later wars. The draft, the necessity to fight in World War II after Japan's attack on Pearl Harbor, government controls on the media, and the increasing support of the American public after an initial period in which many were opposed to involvement changed the nature of military. The U.S. was careful to minimize casualties in the war, but in hindsight they had to minimize casualties still further in future conflicts.

One simple answer is that military bureaucracy is equally inefficient in capitalist and communist states. The market may be better suited to producing desirable goods and services, but government organized and controlled procurement, design, and production may give little room for market forces. Hence the question of good or bad design

becomes subject to random shocks, critical decision choices for good or ill, and plain luck more than in competitive systems. But this would not explain the systematic differences in the types of inefficiencies in the different regimes.

The other possibility is that the very attributes that made the planning and organization of such a large scale invasion so successful – a thorough and professional bureaucracy with rigid chain of command – made it especially inflexible even when faced with disastrous outcomes so long as the U.S. army continued to advance against the Germans. Fine tuning may simply have been very difficult. A system flexible enough to adapt to the myriad changing weapons demands would not have been so single-minded in its pursuit of military advantage.

### **The Argument: Military Decision Making and The Economics of Organization**

In essence, my thesis will be a variant of the Miller work in *Managerial Dilemmas*. Democratic organizations and bureaucracies within a democracy have built-in inefficiencies which are a function of the need for checks and balances when there are multiple and shifting constituencies. Dictatorship has no such problem because no coalition is stable and all structures can be overridden by the dictator. In contrast the very nature of a democratic organization is that the fear of a coalition overriding another group leads to the necessity to create rigidities to demarcate lines of control and establish relative stable procedures. This prevents extreme gridlock from occurring but also guarantees that no one group will be able to force its will on every other, even if that group is in the right. The built in inefficiency is a function of the frictions that are

created. For instance the obvious and quite counterproductive petty squabbles between the Western forces which have been well documented in the histories of the war were also replicated at a more profound level throughout the American military organization have never quite gone away. Various reform movements over the last 50 years have only shifted the locus of negotiations without altering the fundamentally contentious and bureaucratic nature of the armed forces.

One of the most profound insights in all of economics was Coase's observation that the ubiquitous use of hierarchy in business firms seemed contradictory to economists' promotion of the virtues of market competition. But of course, the ubiquity of hierarchy in firms, indeed ubiquity of firms themselves suggests that there are limits to the use of markets. In Coase's formulation the use of formal markets entailed transactions costs that sometimes offset the incentive benefits of competition. Hence firms and hierarchy.

But hierarchy is prevalent not just in business firms subject to market competition but in non-market sectors as well. Hence, understanding the incentive characteristics of different organizations is of wide importance even outside the traditional areas of business and economics.

In Miller's formulation, the problem of hierarchy then becomes one of choosing between the differing tradeoffs between horizontal and vertical organizations, and of deciding which set of substructures within these general categories are more conducive to the problem at hand.

For example, Miller has noted that organizations led by a powerful authoritarian head are liable to be more horizontal, that is, have flatter hierarchies, than more decentralized firms. This is in spite of whatever formal bureaucratic structure may exist.

All else being equal, equivalent bureaucracies will behave differently if one is headed by a clear cut leader and the other by a group with distributed authority. The mere fact of having a “dictator” removes the ambiguity of deciding which preferences will dominate in the decision-making process. But it also means that the members of the bureaucratic hierarchy are less protected by the preexisting rules of the structure. By definition, the more powerful the dictator, the less credible become any ex ante claims of fixed structures or procedures after the fact. The possibilities of rewriting the rules in midstream or of reassigning executives at various levels who interfere with the leader's wishes will effectively flatten the hierarchical structure, as even the highest ranking managers serve only at the whims of the leader. The more that ex ante agreements bind the hands of the leader, the less of a dictator he is, and the more distributed is the de facto power in the organization. (Miller's illustrations of these ideas are drawn from the experiences of Ford Motors under its founder, Henry Ford.)

Benefiting as the dictatorial firm does from the lack of decision making ambiguity inherent in any multi-person organization, that firm will be capable of more focused attention to its goals and will find it easier to shift gears as the leader changes course. However, this means that the organization is hostage to the whims of the dictatorial leader. Without his consent, independent action is difficult unless such action has been effectively provided for in existing procedures or orders.

The drawback to the dictatorial organization is the problem of information gathering and of providing incentives for subordinates to fully inform the leader and convince him of that information's accuracy and importance. The very lack of independence will serve as a disincentive to provide information especially when it

contradicts the stated wishes and goals of the leadership.

In contrast, the flip side is the problem of the vertical, delegated hierarchy, particularly when authority is split between parallel sub-units of management. Absent dictatorship “Every delegated hierarchy must violate Pareto optimality, transitivity, or universal domain...Organizational design in delegated hierarchies necessarily involves trade-offs between various kinds of unpleasantness” (Miller, p. 89, elaborating on the problems of cycling and voting in organization).

The only way to ensure that the powers are delegated and independence is allowed for is to diffuse authority within the hierarchy. This will require credible commitments to abide by ex ante rules or contracts in such a way as to preserve branch independence up to a point. But such independence will be characteristic of the “red tape” and inflexibility which is so often decried when criticism of bureaucracy is carried out. But this problem is almost certainly inevitable in delegated hierarchy, particularly where it must respond to a variety of pressures from top management.

Terry Moe has made this point with respect to the problem of bureaucracy in the federal government. Because members of the bureaucracy realize that their ability to make and carry out decisions pursuant to the goals of their party or organization, yet cognizant of the fact that a newly elected government may invalidate their choices, the bureaucracy has an unavoidable interest in creating rigidities that one can think of as inefficient, but which in fact may be essential to the stability of the bureaucracy. This means that flexibility is limited on purpose and even a change of leadership will find difficulties in changing more than the general outlines of an organization's goals without incurring high costs in terms of effort and expenditure of goodwill capital as well as

other, possibly more serious inconveniences.

The payoff for all this is a gain in informational effectiveness. Semi-autonomous agencies working in parallel are more likely to find solutions to important problems. Independent work in parallel may provide insurance against one group's going off in a very unprofitable direction. However, absent a dictator, there will no way to distinguish between competing claims in the aggregate. And the organization will inevitably exhibit the sluggish conservatism typical of large bureaucracies. These can be mitigated by creating partial dictators -- managers whose decision making authority is final within some limited sphere. But all this does is highlight the inevitable need to select a mix of tradeoffs. The more decentralized, the more chaotic and disorganized and/or bureaucratically rigid. The more centralized, the more focused but also the more subject to catastrophic error due to the leader's oversights.

The military is especially likely to face such problems. At one and the same time, enough authority must be vested in various officers at differing levels to provide a final authority, but the extent of delegation and decentralization will affect both how flexible the organization, as well as its ability to process different information and use it in line with the group's special competencies.

Although the military would seem to face -- in times of war -- a situation somewhat analogous to market competition it has special incentive problems not as acutely felt in business firms. For one thing the military's behavior will be deeply affected by the political pressures it faces from the civilian authorities, particularly when they differ as wildly as they did between the democratic U.S. and Britain, Nazi Germany, and communist Russia. Furthermore halfway measures are more difficult to manage

where victory rather than profitability is sought. Although there are shades of victory and defeat and negotiation leads to a variety of outcomes, the results are still much closer to being binary and zero-sum in comparison to a market where firms may co-exist with different market shares in competition. For all these reasons, the application of the ideas of organizational hierarchy to understanding military decision making becomes intriguing and appealing.

One final point needs to be made about the overall characteristics of hierarchies which derive from the literature on delegation. Most of the work on the role of delegation and risk-aversion has focused on the interactions between a risk averse boss and his subordinate (cf. Bendor, et al., 2000). However, there has been less attention given to the problem of how the choice of hierarchy makes the entire organization more or less risk-averse. It should be obvious that in a dictatorial hierarchy, a perfect dictatorship would fully reflect the preferences and therefore the degree of risk-aversion of the leader. However, the very responsiveness of dictatorial regimes to the whims of the dictator and the very decentralized nature of more democratic structures, suggests that on average the dictatorship will be capable of taking more risks and acting upon them than the decentralized democracy or multi-principal organization. This is entirely consistent with the literature that sees the problems of aggregation which are mitigated in dictatorship being offset by the increased problems of information flow and the need for the dictator to be fully informed at all times and in all contingencies.

### **Allied vs. Axis Strategy**

Undoubtedly, much of the difference between the Germans and the Allies stemmed from the contrast between a professional, experienced military with a long tradition of warfare defending against a fairly green but well-supplied fighting force from countries which had been unprepared to fight at the onset of the war.

It is therefore striking, but not surprising, how many of the major and even minor mistakes of the Germans in WWII arose directly from interventions of Adolf Hitler. In contrast many of the Western Allies' missteps seem characteristic of bureaucratic stubbornness or bungling, inter-agency rivalry, or was the outcome of conflicts between members of the coalition prosecuting the invasion.

Most are familiar with the tale of how the German response to the Allied invasion at Normandy was seriously delayed because Hitler was asleep at the time of the attack and his aides refused to wake him. However, this same absurd dependence on one man also made the German war machine much more capable of the big gambles – e.g. the attack on France, the opening of Barbarossa – as well as rapid response to officially recognized problems – e.g. the rapid development, production and deployment of both the Tiger and Panther tanks.

There is a long tradition of German soldiers blaming their defeats on the idiocies of Adolf Hitler (cf. e.g. Guderian, Manstein, von Mellenthin). But what all these soldiers overlook is that the favorable situation they were in after the Fall of France was as much due to Hitler's boldness (or foolhardiness) as their tactical skill. The decision to invade, and the support for the bold plan to attack through the Ardennes giving Guderian the chance to test his theories of mobile warfare came despite objections from the General Staff. The same with Poland, Czechoslovakia, and Greece. Even the ill-fated attack on

Russia owed its chances of success to Hitler's insistence on making the gamble, while its failure also largely resulted from his capricious decision-making.

Two of the largest strategic errors of the entire war came directly from Hitler. The first was the premature halting of German forces on the eve of Dunkirk, which would have permitted the Germans to wipe out the bulk of the British expeditionary force. The second was the disastrous diversion of the Army en route to Moscow in 1941. Yet the latter is especially telling because it also followed four or five months of absolutely astonishing success. A success which no one except perhaps Hitler had quite anticipated and which seemed to lead to complacency on the part of generals who felt that the war in the East was essentially over in October or November.

While it makes sense in hindsight to see the diversion as inevitably disastrous, Hitler's earlier successes had led him to believe that his strategic vision was infallible. Moreover, disagreements between the leading military figures was commonplace and Hitler felt safe in ignoring them. Of course, it would have been optimal German policy to have fought through to Moscow, just as it would have been best for the Wehrmacht to abandon their ambitious goals in 1942 and switch to a mobile strategy of selective retreat and then counter-attack as the Russians overextended themselves. But even within the military hierarchy how was one to realize that the torch had passed from Runstedt and Guderian -- who had conceived of the theory of blitzkrieg and was the inspiration for the Fall of France and the initial attack in Russia -- to von Manstein? He represented the old-line general staff who had always been conservative, wishing to wait for larger forces before invading either France and Russia, but he came into his own after the defeat at Stalingrad with his successfulness with the mobile counterattack.

Yes, it was Hitler who ultimately was to blame for insisting that the German army never retreat and hold fast even in the face of inevitable destruction. Yes, a policy in conformity with Manstein's views would probably have provided them with the opportunity to stalemate the Russians or at least draw out the conflict till a settlement could be reached. But this was unlikely given Hitler's faith in himself, and given the fact that his earlier successes had led him to concentrate more and more of the direct control over the army in himself. Moreover, it may have been Hitler's standfast policy that saved the German army during the counterattack before the gates of Moscow (cf. Keitel). This strengthened his belief that his vision was superior to the bureaucratic bungling of even his best generals. Long before Barbarossa, Hitler worked through his various orders and the new Law for the Defence of the Reich to limit the powers of the Army Commander-in-Chief and provide himself with all crucial decision-making power. Whatever incentive there was to hand over tactical and even strategic decision-making to the military experts was systematically weakened as Hitler continued to intervene and appointed those favorable to his views to leadership roles (Cooper, 1998, p. 177). He went so far as to sack Runstedt, Manstein, and Rommel at various periods, only to recall them when a crisis developed.

There is an ironic symmetry between the centralization of power of the German Army and Hitler's increasing foolishness and Stalin's conduct of the war (noted especially by Glantz and House). Like Hitler, Stalin had concentrated power over the Army in himself and, as is well known had also murdered hundreds if not thousands, of the best Soviet officers prior to the war. Like Hitler, Stalin set himself up in 1941 as commander

in chief of the armed forces. Stalin's initial unwillingness to believe that the Germans had invaded despite reports from the front, as well as his foolhardy insistence on not retreating (cf. Hitler 1942-45) helped contribute to the destruction of well over 200 divisions in the first few months of the war. This stubbornness mirrored Hitler's own growing obtuseness in not permitting his troops to withdraw in the closing years of the war as the Russian army took back what they had lost in 1941. Unlike Hitler, it seems that the sheer scale of the initial Russian debacle with the loss of more troops, armor, weapons, and planes than had existed in the entire German army before the assault on Moscow caused Stalin to pull back from his own judgments and seek the advice of more seasoned advisers like Zhukov, Rokossovsky, and Vassiliev. Even then, Stalin's amateur strategies, like Hitler's led to disasters as he ordered counter attacks in 1942 that squandered their victory at Moscow and returned the initiative to Hitler. Only his willingness to make use of his greatest asset -- the sheer size of the Soviet armed forces and his ruthlessness, coupled to that of Zhukov, who also saw nothing wrong with killing tens of thousands of men to gain small advantages -- "saved" the Soviet Union. The sheer brutality of the Russian approach to war can be seen from the little known fact that at the very moment of the defeat of the German 6th Army in Stalingrad -- the famous Operation Saturn -- the contemporary northern Attack dubbed Operation Mars and led by Zhukov resulted in no real gains as the Russians suffered over 300,000 casualties trying to dent the line held by Army Group Center. Losses which exceeded German deaths at Stalingrad.<sup>2</sup>

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<sup>2</sup> In one sense Stalin was less of a dictator than Hitler. Here I am not speaking of his tyranny but rather dictatorship as the word is used in the literature on hierarchy rather than politics. The term dictator simply refers to a single leader whose authority and decisions are taken as the sole standard for the organization as a whole. The less likely were people to follow the leader, the more monitoring and control was necessary

Thus, while Germans and Russians had very different characteristic skills and tactics given their different starting points, the sorts of difficulties encountered by both armies was closely tied to the highly centralized power wielded by the two great tyrants, Hitler and Stalin.

An interesting addition to this is the extent to which Hitler directly intervened in specific procurement decisions, becoming so obsessed with weapons development as to veto or approve designs directly. This led to a variety of complex, unreliable inventions that were hard to repair and restricted the efficiency of the army. Yet, even here it is hard to be uniformly critical of the Fuehrer's decisions. The standard view -- argued by most writers from Glantz and Cooper to Ambrose -- that Germany would have been better off with fewer and simpler designs that did not squander Germany's limited resources overlooks the fact that Germany never stood a chance of producing enough numbers of tanks, planes, and supplies to challenge the prodigious productive power of the U.S. and the U.S.S.R. Indeed, even given the insufficient number of tanks and artillery on the Eastern Front, the Germans found themselves unable to supply enough bullets, shells, fuel, and spare parts.

Does it make sense to imagine that having had a larger quantity of lesser equipment would have really helped after the midpoint of the war when Germany had neither the manpower nor the fuel to support their existing stocks and when it was certain

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for the lower levels to act in accordance with the leader's wishes, the less of an effective dictator the leader was. In this narrow sense, Stalin was a weak dictator at the start of the Second World War. The constant fear of a coup and the lack of support within the army which would have been intensified in the first few months after the invasion debacle made the need for rigid structure necessary. Furthermore, at a time when soldiers were likely to flee or surrender when confronted by a confident German army, the need for discipline required a rigidity not consistent with the picture of a "successful" dictator. In contrast, the very success of the Germans early on, lessened Hitler's need to monitor the lowest levels, since success tended to make the soldiers more willing to act on their own initiative in the name of a leader they clearly believed

that the Germans under any circumstances would match the productivity of neither the Soviet Union nor the United States separately, let alone the overwhelming imbalance that came when both nations reached their productive peaks in 1944?

The fabled Tiger tank -- which was the most feared land vehicle in the war -- has also been the subject of derisive dismissal by many experts who have pointed to its unreliability, expense, and needless complexity compared to the Sherman or the T-34. However consider the results: Against the Russians, small numbers of Tiger tanks led by trained elites performed astonishing tasks. Glantz notes that a few dozen Tigers destroyed up to several hundred Russian tanks during the Battle of Kursk with minimal German losses. Time and again, as von Mellenthin has argued, German tactical skill allied to superb materiel led to remarkable successes even when greatly outnumbered by Russian armies.

I also think that the quality of German equipment and, more important, the promise of future “wonder weapons”, was an important component in motivating the German army towards the end of the war. In reading account after account of the unbelievable imbalances between the Allies and the Germans on both the Western and Eastern Fronts, what is surprising is not how disheartened some Germans were, but rather how many groups fought on with vigor and even enthusiasm. Some of this may be written off to fanaticism or ideological loyalty. But I think that writers have overlooked the sheer advantages of having troops who continued to have positive tactical experiences at the individual unit level even when all was lost strategically. The fact that in encounter after encounter, the Germany army could boast of having killed or destroyed

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in. The tables were to be turned later in the war as Russian successes increased and ultimate German

more troops and equipment than they lost must have been a constant source of hope, perhaps the only real evidence of hope, when the odds were so overwhelming that no objective observer could have argued for a German success.

Nonetheless it is also true that this tendency to intervene had as many or more negatives as positives. For every Tiger there was an Elephant. The latter was a grotesque heavy tank destroyer used at Kursk after Dr. Ferdinand Porsche's design for a Tiger was rejected. It was at the time the heaviest vehicle in use and resulted directly from Hitler's obsessions with mass and armor. It was not only unreliable but it was incredibly slow. Even worse was the fact that it lacked a machine gun, which made the vehicle prey to infantry when unprotected as was quickly demonstrated at Kursk where it showed how flawed a design it was. Other examples include the delay of the Me262 fighter when it might have made a small difference because of Hitler's insistence on developing a bomber first, or the enormous expense wasted on the V2 rocket at a time when the much cheaper V1 was actually serving quite well, not to mention the severe lack of supplies in the rest of the military.

### **Organization and Tactics**

Differences between the Allied and Nazi organization and tactics at the ground level were quite striking. Whereas the Germans stressed cohesion, coordination, and effective use of combined arms maneuvers, the Allies were plagued by inter and intra group bickering and backbiting. Though fiercely loyal to each other, American troops often complained about their officers and there continued to be great friction between the

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defeat loomed larger.

two major army branches of infantry and armor. On occasion the one refused to come to the support of the other. No doubt these differences were further exacerbated by the youth and inexperience of the American soldier as well as the fact that the majority of the American GIs had never trained with armor. In contrast the Germans stressed combined arms training designed to simulate actual conditions, often using live ammunition. The existence of a professional, well-trained elite in the both the Wehrmacht and the lead SS armor units no doubt aided in the cooperation as well as the fact that there seem to have been less criticism of German officers' decisions in hindsight than those of the Allies. Furthermore, by the time the Americans faced the Germans, the Germans had had the advantage of experienced troops fully "broken-in" by the bitter fighting on the Eastern Front. In the Eastern Front the Germans had developed extensive experience in dealing with a numerically superior foe, armed with excellent weapons, and controlled by leaders who had no qualms whatsoever about sending tens of thousands of men to their deaths to achieve even the most limited of objectives. In contrast, the struggle against an enemy that was inexperienced, had inferior land armor, and was not quite as cavalier about squandering its soldiers' lives must have seemed the lesser of two evils.

The U.S. could not adequately or rapidly respond to these factors because the incentives faced by military bureaucracy were conditioned by their ultimate need to be responsive to the demands of the leaders in Washington, D.C. and the demands of the U.S. Congress. The vague goals provided each branch of the military, and the constant infighting reduced the rewards for innovative behavior while increasing the risks of *acknowledged* failure immensely. Hence the bureaucracy was designed to minimize accountability and to limit the initiative of individuals who would encounter enormous

opposition for daring to claim that the U.S. was so inferior as to cause the unnecessary death of American G.I.s.

It is therefore unsurprising that the Allied strategy essentially involved advancing steadily on a broad front. This system denied Patton, for example, the fuel necessary to make a blitz like dash in the fall of 1944 when vigorous action might have won the war earlier. It also led to unnecessary caution towards the end of the war and, by delaying German surrender, led to needless casualties on the part of the West. However, this cautionary, even stolid method of proceeding was also consistent with the political demands of holding a coalition together and also made possible a strategy that did not favor one branch of the military over another. In the long run the U.S. could count on her sheer material superiority as the deciding factor. Whether that superiority was always used wisely is a point that military specialists will continue to debate. However, the point of this essay is underscore how much these problems were not simply aberrations or evidence of military incompetence. Rather they were the inevitable outgrowth of a delegated hierarchy in which there was a lack of a clear cut dictator. This necessarily limited both flexibility and speed of response. But it did ensure that maximum force was brought to bear when it came time to enter Germany. And in a long war, neither the skill nor flexibility of the German war machine could hope to match the sheer cornucopia of weaponry produced by the U.S. economy.

Individual initiative was possible in both armies. But at the strategic level, the Western Allies were constrained to take into account the needs of their coalition partners. This would have exacerbated the problems inherent in a democratic army. Bear in mind that this is not simply a question of having a proper chain of command. In a democratic

army, having a uniform commander-in-chief does not solve the problem of ex post politicking or of making decisions coalition proof. There is no way to know ex ante which concerns are likely to shape the decisions of the leaders and how the states will respond to deviations from the “grand plan.” Consider that in 1944 Patton argued plausibly for the possibility of a quick rush to Berlin that might have ended the war that year. However, Patton was denied the fuel and related support to make that rush in the desire to balance out the concerns of both Patton and Montgomery.

Contrast that with the German treatment of many spontaneous decisions in the army. One of the greatest and most telling criticisms of Hitler was that he was an amateur when it came to both grand strategy and tactical detail yet he was fond of managing both. Nonetheless, one positive characteristic of this amateurishness was a tolerance for battlefield improvisation. For example, when Rommel first arrived in North Africa he had directives that limited how far he could advance. However, Rommel strategically chose to “overlook” his orders and pushed the British back at an unheard of rate. When having to confront the leadership he asked if they wanted him to give territory back. The Germans made the most of this decision and accepted in hindsight the favorable hand they’d been dealt. Indeed, from the Fall of France to the first years of Barbarossa, the German battle plan had required a combination of strategic planning but tactical flexibility. Hitler had profited from favorable improvisation in the Fall of France and he came to rely on such happy accidents throughout the war. The commanders knew that within limits battlefield deviation was always permissible if it led to victory. This is consistent with dictatorial hierarchy. So long as one obeys the spirit of the dictator’s orders, one can have reasonable leeway to improvise. Indeed, even in the famous debacle

of Stalingrad, it was Paulus's obstinate refusal to break out of the city against Hitler's orders that doomed him. Yet other generals had in fact done as much and Manstein had been constantly urging Paulus to simply breakout and deal with the matter after the fact.

In contrast, for the Western Allies the political imperatives of the coalition were often as important as the overall desire for victory. This would have meant permitting a lesser degree of flexibility to otherwise individualistic soldiers. One could argue that the very characteristics that made Patton such a dashing general and that earned the respect of his enemies – his brashness, courage, élan and even impulsiveness – made him suspect in the eyes of the bureaucracy. More than once his outspokenness got him into trouble and he was always angered that Bradley had been placed ahead of him. At the same time, when Patton complained in April 1943 that the British entrance into Tunisia would leave the Americans without a hero, complaints to Eisenhower caused the British assault on the Germans to be delayed to allow the Americans to participate. That this same political pressure was brought to bear on him in 1944, when Patton was denied the opportunity to make a dash to the Rhine and possibly end the war early, because of Montgomery's desire to pursue a separate assault in the North (the failed Operation Market Garden) was a bitter irony.

In the long run some of this bureaucratic pigheadedness paid off in the sense that the U.S. system made mobilization for full production easy and successful. They could afford mistakes like the decision to supply only Sherman tanks because the U.S. knew that sheer logistics would win out in the long run. Moreover mistakes in procurement in one area (like the Sherman) were offset by favorable decisions in others (e.g. the development of the P-51 Mustang). No one view of warfare or weaponry was

consistently pursued throughout the military, certainly not to the degree posed by Hitler's personal intervention. Furthermore, the steady broad front strategy of attack was probably not the most efficient way to conduct the invasion, but it was reliable and left less room for dramatic error. Errors which might have been magnified in the democratic press and which might have done much to dishearten the public. In contrast, dictatorships – by positing clear objectives – have real advantages in short conflicts. The lack of ambiguity allows speedier adjustments but as we have seen also magnifies error.

Having succeeded so well in the early phases of the war, Hitler so centralized command in himself that he not only put himself in position to ignore the advice of the professionals but he also made it difficult to obtain reliable feedback about his actions. His certainty regarding his “vision” was devastating when the war changed to a simple slogging match or war of attrition. In the latter mode (from late 1942 or 1943 on) the cautiousness and experience of the military elite was superior to the amateurish hunches of the Führer. But it was too much to expect for a man who felt he had succeeded where the elite had failed and was now in no mood to rethink his position.

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## Appendix I

## Thickness of Armor Penetrated at (yards)\*

<b>Weapon</b>	<b>250</b>	<b>500</b>	<b>750</b>	<b>1000</b>	<b>1500</b>	<b>2000</b>
<b>Germany</b>						
75 mm long KwK 40 (indicates with special ammo)	All	96(120)	?	85(97)	74(77)	64
88 mm (indicates with special ammo)	All	110(156)	?	100(138)	91(123)	84(110)
<b>United States</b>						
75 mm M3 (std. Sherman cannon)	All	66	?	61	56	51
76 mm (upgraded Sherman)	All	All**	All**	98	?	?

Source: Ellis, 1995 (pp. 303-305).

\*ideal shot which will be modified depending on angle of shot, facing of armor, and other complications. Damage to vehicle depends on mass of shell, characteristics of tank and location of shot.

\*\* Should be no better than German long 75mm with improved ammo and less penetration than the 88mm.

## Appendix 2

### Comparative Armor Thicknesses of Leading Tanks (mm)

	Frontal Hull	Side Hull	Turret
<b>Germany</b>			
Pz IVF* ('42)	50	40	50
Pz V (Panther '43)	80	50	100
Pz VI (Tiger I '42)	100	60	100
Pz VI (Tiger II '44)	100	80	180
<b>United States</b>			
M 3A1 Lee (1942)	51	38	57
M4A3 Sherman ('43)	51	51	76
M26 Pershing ('45)**	101	76.2	101
<b>USSR</b>			
KV 1 (1942)	110	90-130	120
T34 (1942)	47	47	65
T34/85 (1944)***	47	60	90
IS 2 (1944)	95	120	160

Source: Ellis, 1995 (pp. 303-305).

\* Multiple versions some with greater, earlier ones with lesser armor.

\*\* Small number perhaps 12 at most issued to European Front.

\*\*\* Indicates 85 mm gun version of T34 standard in 1944.

Note: Leaves out issues like sloped vs. flat armor. In practice sloped armor of Panther made it almost as hard to penetrate as Tiger 1 much of the time, while U.S. Shermans prone to burst into flame with direct hits near engine.

<sup>1</sup> The dramatic destruction by the Americans of the fabled German tank commander Wittman is actually typical of many encounters. The German tank ace with several hundred kills on the both the Eastern and Western front to his credit was finally trapped by the Americans in a small town. Despite being heavily outnumbered Wittman was only stopped when his Tiger tank was blown up by five Shermans firing simultaneously at the tank from all sides at nearly point blank range. This explains why even Patton often instructed his troops to evade rather than engage the best German tanks.

<sup>2</sup> Indeed some authors, such as Zetterling, have concluded on the basis of statistical analysis that Kursk was less damaging to the Germans than has heretofore been thought, costing them at much less than 5 percent of the total losses in 1943. In this revisionist view the real damage to German forces came with the massive offensives launched in the East after Kursk had ended.