

SOME CHARACTERISTICS OF OUR ARMY

Almost 30 years have passed since the Korean War. During these 30 years, the German Armed Forces have come into being again and have been exposed to a great many contradictory influences. Two of the influencing factors should be given especial attention: The spiritual legacy of Guderian as well as the technical slant of our thinking.

It was Guderian who, 50 years ago, was almost the only one to recognize the then-capabilities of tanks and armored forces. In addition, he had the good fortune to see his proposals put into practice and to observe the ensuing successes. In this way, he laid the basis for the victories which the Wehrmacht achieved on a great many battlefields. His military genius is uncontested -- abroad almost more than at home. Of course, Guderian would have been the last one to believe that a concept of the years 1930 to 1940 could also be evaluated in the year 1980 as a sign of the times. Now, not one of us wants to adopt unchanged a 40 year old concept for our use. However, it is significant that most of our superiors would be glad to hear themselves described as typical tank generals, whereas, in case of the characterization "infantry general", they would smile somewhat uncomfortably. We carry out long range tank raids in our maneuvers and conduct mobile operations over wide areas. Our former chief of army staff even characterized the Army as an "armored avalanche" (70). This is quite like it was with the cavalry divisions before the First World War when the "cavalry spirit" was cultivated and Great Attacks were exercised, and it was fashionable to be associated with them. Nothing of this is false, and nothing of this is objectionable. On the contrary, would we not be poorer if we were able to coolly resist the fascination arising from maneuver, speed, firepower and command of a mechanized major unit? The soldier deserves our sympathy who is no longer impressed by such features and can no longer become enthusiastic.

Still, we should ask whether the shadow of Guderian has been contributory to the further development of our Army. Has the justified admiration for his military performance allowed us to ask with the persistence necessary how a technical-tactical concept must appear which is suited for the final years of the twentieth century? What concepts result from the technology of the 1980s, from the terrain, from our strategic situation and from forward defense? Weapons technology has considerably changed since Guderian's time. The same is true for strategy. We have forward defense today. Guderian knew nothing of the word, not to mention the fact. wisely. And, in addition, the terrain has also become populated to such an extent that it has become cluttered as could hardly have been dreamed by Guderian in 1930. What is the effect of these changes on the combat and combat effectiveness of mechanized forces?

The second important factor in the intellectual climate of our Army is the technical slant of our thinking. This is a necessary and welcome phenomenon in our times and in a high technology army. Whoever has experienced the beginnings of our Army will believe that this slant of our thinking was perceivable already at an early time. For instance, in the relieved and justified statement that those times have passed in which the German soldier had to carry out a "poor man's war" and had to replace the lacking technical understanding and material by blood and bravery. The new open-mindedness with respect to technical matters was necessary and justified, although it has brought forth many strange blooms. Haven't we provided each and everyone, down to and including the division chaplain and corps engineer, with vehicles whose four-wheel drive and differential gearing took no notice of the fact that we can use one of the densest highway networks in the world? Do not our corps today have incomparably more of the exceedingly expensive and complicated transport helicopters than even the American corps -- a technical miracle of questionable cost effectiveness?

Still, without openmindedness to all technical questions, we would not be able to solve the tasks of a technically-oriented age. Of course, it can be asked if it would be harmful if some degree of relaxed skepticism crept into the openmindedness. Perhaps it is typical in the positive as well as in the negative sense that our Bundeswehr universities exclusively offer technical courses in addition to education and economics. Perhaps it would be good if we took a little less for granted that technology is the solution of a great many problems, if we assumed somewhat less often that the cost effectiveness of advanced technology is obvious and replace a cost effectiveness analysis by a firm faith (71).

Weapons technology has experienced much advance since the Korean War. Our divisions of today are optimized for long-range firepower as well as mechanized mobility to an even much higher degree than the American divisions of the Korean War. In addition, they have been developed in the intellectual environment of the Federal Republic and our Army. How would these divisions prove out in the Central European terrain? A well-grounded, demonstrable answer to this question presupposes a great many comprehensive studies which additionally had to be substantiated by field tests and maneuvers. Studies alone, especially operations research studies will scarcely suffice. The concepts of current experts on the capabilities of the tank as well as the infantryman would flow almost undetectably into the input data and from this hidden location decisively affect the study result (72). However, studies of such a type could work out the underlying factors and define their significance as well as their mode of operation. The writings of a single officer, on the other hand, can provide no demonstrable answer to the qualification of our division type for the Central European terrain. They will only direct attention to a number of special important factors.

Forests and builtup areas cover 40% of our German terrain. In addition, open spaces are often surrounded by covered areas and the lines of sight and fields of fire are restricted. Far more than 40% and perhaps 50% of our terrain comprise areas, accordingly, with very short lines of sight and correspondingly short combat ranges.

Thus, a defending major unit has the task of conducting surveillance over huge covered areas. It is still more important that the positions pass through kilometers of builtup areas and forests. Unfortunately, we cannot leave too many undefended gaps. The regulation will have it otherwise. Our Chief of Staff speaks of the "strategy of the continuous Front", of the need to dominate all terrain sectors by firepower and to preserve the coherency of the Front (73). Accordingly, what are we to do?

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Fortunately, we have been given a tactical command regulation. It teaches us how we are to solve the tactical tasks of modern warfare. This regulation clearly specifies that the builtup areas and forests which present mechanized forces with tasks difficult to solve are to be defended by motorized infantry units. God be thanked! The regulation even provides us with the rationale: Mechanized forces cannot play out their trump cards in these areas, long-range firepower and mechanized mobility (74). They would otherwise resemble a beached whale: powerful, vigorous, impressive -- and completely in the wrong place.

The guidance of our command regulation is convincing. Except for one thing, it brings us not even by magic a single infantryman. Motorized infantry units are rare. In the opinion of a great number of thoughtful colleagues, they are units that do not work too well. Finally, they are soon being superseded anyhow. However, who is to defend those spaces in which we operate no mechanized forces and which we are to reserve for the motorized infantry? It certainly cannot be that the basic tactical regulation and the organization of our Army are not in agreement? The regulation declares that motorized infantry forces are necessary, and the Army is breaking them up.

If we no longer have motorized infantry, we must resort to MICV-infantry for combat in covered areas. Until recently this was a good deal easier to justify than now and in the future. It was just a short time ago that our MICV were finally equipped with an armor-piercing weapon, an antitank guided missile. The MILAN is clearly superior to the tank gun over long ranges. At short ranges, accordingly in builtup areas and forests, it cannot, however, be employed, and it is then confined along a few large highways. In addition, the MILAN also has its cost. In order to make room for the weapon and its ammunition, we had to do without one of those soldiers who dismount from the MARDER and who can fight as an infantryman. Accordingly, it is no longer quite correct when we are told that MICV-infantry is well suited for combat in covered terrain (75). Their "dismounted strength" is slight. The

MARDER battalions are a hybrid. The dismounted infantrymen must require terrain with short to very short firing ranges. The MICV and especially its MILAN require more open or even completely open terrain. The MICV units are like a man who has one leg quite short and whose other leg has grown quite long. How is the man to walk? The tactical command of an armored infantry squad is difficult for this reason. Indeed, none of us would voluntarily do without the MILAN. We are happy that we have it. However, we must also accept the consequences from arming the MARDER with the MILAN. Whoever sends MICV infantry into covered terrain is giving away a good part of his armor-piercing potential. This, however, is very difficult to justify. Is not defense, above all, combat against enemy MICV and tanks?

The covered areas accordingly cannot be defended by motorized infantry because we will soon no longer have any of them, and they can hardly be defended by MICV infantry because the latter have only a limited suitability for this task. As numerous war games of our Army have proven, there remains, for this reason, hardly anything left for the tactical commander to do than to disregard the undesired buildup areas. With good conscience? Certainly, for the most part. Facts and factual constraints also produce often enough their justification and foundation. Thus, many measures of today's NATO armies become most easily understandable under the bold assumption that the enemy will avoid all covered areas, bypass forests and enter no cities (76).

However, did not Moltke give warning more than 100 years ago that the defender must seek the open terrain whereas the attacker will make for the broken-up terrain? (77) What will happen if this principle is still valid today? Didn't one country (i.e., France) throw away victory and honor in 1940 because it believed that mechanized formations would never attack through covered terrain? Did not Guderian show us in 1940 that forested highlands -- the Ardennes -- can in no way prevent the attack of large mechanized formations, the attack of entire tank corps provided they are insufficiently defended? Why should this no longer be valid today?

Added to this, it should be noted that the systematic utilization of buildup areas would provide the attacker not only with protection from guided missiles and artillery fire but would also provide an almost absolute protection from nuclear weapons. For who would launch a nuclear weapon against an enemy target in a large buildup area within their own country? Further, transportation routes connect the buildup areas and intersect in them. The possession of buildup areas accordingly facilitates our own movements and obstructs those of the enemy. Finally, many units of NATO, in spite -- or perhaps even because -- of their highly modern weaponry will find themselves resorting in buildup areas again to the Molotov cocktail as an antitank weapon. "No current US Army antitank weapon can be fired from an enclosed room without the backblast injuring the operator." (78) How will this appear in the case of our antitank hand weapons? An American criticizes his own army owing to the experiences in the Vietnam War: "If I were a Soviet planner, I would take a look at what the American Army does best, and I would hardly face them in the open fields on a nice clear day. I'd pick the

most hideous weather I could find in the world, and I'd probably go right down the main street of the biggest city I could find because we don't do either one very well. We don't practice in cities. We are poorly equipped... We are going to have to learn to fight in the builtup areas. We are going to fight with what we carry on our backs. Right now we are spending all our time and all our attention on supporting arms... The Russians ... spend roughly 22 percent of their time in urban, fortified and barrier (forest) warfare and how to fight it. They seem to have equipped their forces to do this job very well..." (80a). Could not this severe criticism be also partly valid for our Army?

#### TACTICAL CONSEQUENCES OF ANTITANK GUIDED MISSILES

The defense of covered areas is already today, in principle, an almost insoluble problem for the Bundeswehr. It is probably that the problem will intensify considerably in the future. This development could result from the massed introduction of antitank guided missiles.

It appears that our command has high hopes for antitank guided missiles. In an armored brigade, they already represent a considerable part, more than one-third, of the armor-piercing potential. An armored infantry brigade even has just as many guided missiles as tube weapons for the engagement of enemy tanks at rather large ranges. Their armor-piercing potential is already half-based on the new weapons. The corps maintains with its antitank helicopters and the airborne brigade an unheard of expensive and hopefully also correspondingly capable reserve whose armor-piercing strength exclusively consists of guided missiles. The antitank guided missiles accordingly represent more than one-third, perhaps even almost half, of the armor-piercing weapons which can be operated at medium and rather large ranges although there is little experience concerning the capability of these weapons in operations up until this time. This shows the confidence placed by our leaders in the new weapons whose deterrence effect our former Chief of Army Staff even compared with the effect of nuclear weapons (79). In view of these facts, should we not shed light as soon as possible on how these extremely effective weapons introduced in very great numbers can modify tactics? Has not every new weapon up until now modified tactics? Should this not be true in the case of guided missiles also?

This question has been discussed in detail and responsibly for years in the Warsaw Pact (80). The candor is impressive with which officers of all ranks give their opinion and also certainly are allowed to do so. A comparable discussion in the Bundeswehr has so far not yet been noted.

The discussion concerning the tactical consequences of a massed introduction of antitank guided missiles is accordingly still to be done. Whatever the result of the discussion may be, it will be influenced measurable by the three most important performance data of guns and missiles:

The greater the combat range, the greater is the superiority of the missile over the tank's gun,

The lesser the combat range, the more superior becomes the tank's gun,

Below certain ranges, many missile types cannot be employed.

Antitank missiles are accordingly ideal weapons for open terrain under good conditions of visibility. If they satisfy only a fraction of the expectations of our leaders, the more open the terrain, the more it will be dominated by them.

What can the enemy do? He must react in such a way that he neutralizes the strong features of the guided missiles. In this regard, there are only two possibilities: The enemy can reinforce the covering fire and can withdraw from the open terrain into more covered terrain. Presumably, he will do both. This means that missiles will, corresponding to the quoted concept of Moltke, force the enemy into covered areas in which he can be sheltered from the prepared fire of the defender. He will accordingly seek to advance in the covered areas. For combat in these areas, however, we lack adequately organized and equipped forces. This development would take place otherwise only if the guided missiles were unable to perform as promised by our leaders. This we will not hope. What shall we do, however, when the enemy advances with strong forces through builtup areas and forests and we have only LEOPARDS and a few MARDERS available and neither is quite suited for these areas? Should we leave all builtup areas and forests to the enemy without a fight? Their size notwithstanding?

#### MOTORIZED (JAEGER) INFANTRY FORCE AND NEW ARMY STRUCTURE

Our Army presently features, in addition to unmistakable weaknesses, at least just as important strengths. It is outstandingly equipped and well-suited for combat in open terrain. It is conceded that only a few conscript gunners can achieve maximum performance from the LEOPARD guns. The young noncommissioned officers of the armored infantry are, with training and command and control of a MARDER squad, almost without exception far overburdened. However, our mechanized brigades represent overall a sharply honed sword which every attacker must fear. More particularly, the equipment with MICV makes our mechanized brigades superior to the comparable units of all of our allies. They are at least equal to those of the Warsaw Pact.

Alongside this important and impressive strength of our Army are to be found the well-known weaknesses and especially the lack of units suitable for combat in covered terrain, which exist in wide areas of the Federal Republic. This brings up the question as to the causes for the present situation, accordingly as to the history of our Army as well as to developments in the foreseeable future.

At the beginnings of our Army concepts are found which are rooted deeply in German military tradition and accommodate quite well the intellectual legacy of Guderian: to strike the enemy by attack and by wide-ranging operations of strong armored units. This concept immediately showed up in 1950 in the monastery Himmerod when the very first operational and organizational concepts for a German Army were elaborated. It was intended to utilize the German contribution to the alliance for recovery of the initiative and for mobile operations. "It will accordingly be necessary to frontally contain the enemy advance with a group between the Main and the Luneburg Heath and, with two other groups from the South German and Schleswig-Holstein area, fall upon the enemy in as great a strength and as soon as possible. By all means we must try to transfer these operations as soon as possible to East German territory." On this account, the German contribution to the alliance was to consist of 12 armored divisions (81).

The characteristic of this concept featured the conviction that the initiative should be taken from the attacker by an attack. For this reason, our divisions were to be capable of long-range offensives, especially since it appeared to be necessary "to carry operations to East German territory as soon as possible." This justified, even required, mechanizing the entire Army since only such major units are capable of a long-range offensive and wide-reaching battle of movement.

An operation as set forth by the officers assembled in Himmerod is inconceivable today for various reasons. In addition, it is not ever desirable. Today, both power blocs have extensive arsenals of nuclear weapons. A counterstroke as was outlined in Himmerod could today trigger the all-encompassing nuclear war. The offensive concept of Himmerod has accordingly long been given up. It was probably already dead de facto even before the first soldier put on his uniform at the end of 1955. The associated army structure, however, did not disappear with the offensive concept. Looking back, it is easy to understand at least the psychological reasons for this. The intellectual legacy of Guderian and the great successes of mechanized forces in the Second World War were fascinating. In addition, nuclear weapons required great mobility and radiation protection by armor. It was probably not possible to always sufficiently investigate whether other paths could lead to the desired goal. For this reason, we developed in the period from 1955 until today, and with an increasing exclusivity, an army which would be best suited for long-range attack operations in open terrain whereas in fact, it has to carry out (forward) defense in Central European terrain.

At the same time, it is noteworthy that we were still considerably less extreme in 1950 in Himmerod than we are today. Let us concede that all 12 German divisions were to be armored divisions. However, these divisions deploying mainly in the Upper Palatinate and in Schleswig-Holstein should only be the shining sword, the counterattack weapon of the defender. It was not believed that every NATO division in Central Europe

has to be fully mechanized. This is because between the two German counter-attack groups, which were to be reinforced by some allied troops, the bulk of the allied divisions was to deploy - and these were at that time still mostly infantry divisions. Yes, it is typical that the Himmerod memorandum in spite of all the emphasis on the tactical offensive concept and mobile operations dared to require strong frontier fortifications "for example, on the Czech border, the Main Line, the Fulda-Weser Line, in the Sauerland and, above all... in the Hamburg area." (82) These are proposals which are almost inconceivable in today's army. Whosoever dared to make them makes himself ridiculous. Our emphasis on mobile operations has become even more accentuated -- or one-sided. However, we thereby leave unutilized those advantages and capabilities which stem from our defensive strategy. It is only an attacker which must completely mechanize his combat forces today. The firepower of modern weapons is so strong that field forces can only attack under the protection of armor. Offensive intentions have become exceedingly costly, and this is clearly shown by the divisions of the Warsaw Pact. On the other hand, the defender who renounces the strategic offensive has great advantages. Naturally, successful defense assumes mobility, above all mobile reserves as well as forces which can carry out a hard-hitting counterattack. The defender must quickly shift his point of main effort and accordingly be able to move forces. The attacker must know that the defender can also encounter him in an attack. Only mechanized forces are suited for all these tasks and perhaps to an extremely limited extent air mobile forces. The total mechanization of our Army is often based on this argument. The argument, however, does not hold. It is not wrong but much too one-sided. It fails to see that, particularly in forward defense, the defender cannot do without a continuous control of the area by firepower (83). In view of the minimal depth of the space available, no terrain sections may remain which the defender does not dominate by firepower. The attacker would otherwise simply pass on through. This means that we still require at any time and in any terrain sector a "minimum force", accordingly so much firepower that:

The approach of the enemy can be recognized and reported without delay.

And the approaching enemy can be contained until the arrival of reinforcements and, in the worst case, can be delayed without incurring too great a loss of terrain.

The "minimum forces" required for these tasks must remain continuously in the area. If they were withdrawn, the enemy could simply thrust through the area in a few hours. There is no reason for perceiving why the minimum forces provided for covered areas must be mechanized. On the contrary, their mechanization is unsuitable. Why?

From the viewpoint of the defender, it is not a continuous occupation which is necessary but only a continuous fire effect. The number of weapons required for this purpose is the result of two factors: Range of weapons and terrain. The more covered the terrain, the shorter the



possible firing ranges and the smaller the terrain sectors which a weapon can dominate. The more the terrain is compartmentalized, the more meaningless will be the maximum range of the weapon and the more important will be the question as to how many weapons will be available in total.

An armored battalion has, in the case of an 80% operational capability and not counting the commander's tank, about 40 tank guns. In a 5 km wide defensive position, it is possible at any point in front of the position to bring to bear the effect of at least 20 and at most 30 guns of our battalion -- and on both flanks, there are still the guns of the neighboring battalions overlapping into our own sector. These numbers are however valid only when the terrain is open without cover. The attacker must then, in order to be able to gain ground, put out of action or under run the fire of at least 20, usually even 30 defending main battletanks. This is no easy task.

On the other hand, all conditions are changed with a terrain broken up into small compartments. Assumed that the average lines of sight amount only to 200 m. The defending position of the battalion of 500 m width then has 25 terrain compartments for whose defense we again have available 40 tanks. Two tanks will then interact in 15 terrain sectors whereas there will be no more than a single tank in 10 terrain sectors. The enemy accordingly needs only to put out of action one tank or at best two tanks to subsequently gain space without hinderance. The schematic example makes clear that high performance -- in this case, a greater range of the tank guns -- is only meaningful when the terrain absorbs the greater performance (84). In terrain which is broken up into small sectors, the defender is well advised if he selects short-range weapons which can be procured in great quantity. Evidently, the principle is valid that, as the possible combat ranges decrease, the number of weapons available must increase whereas, with the increase in combat ranges, the range of the weapons may rise whereas the number of weapons may drop (85).

To commit high-technology forces with weapons of greatest technical performance and great range in covered terrain, accordingly means more than a waste of resources. An employment of such a kind is wrong for two important reasons. It overlooks the fact that quantity cannot simply be replaced by quality -- in this case, a great range. In addition, it fails to note that cluttered terrain requires mainly quantity -- that is a great number of weapons depending on the number of terrain compartments. Further, one of the great advantages of those commanders who reject the strategic attack and subscribe to the strategic defensive remain unused, and this is the capability for waiving the mechanization of part of their combat forces, the minimum forces.

This is precisely, however, what we have been doing to an increasing degree since 1955. We often maintain that thereby we are putting into practice the ideas of Guderian and cultivating the genuine armored spirit. The question should, however, be asked whether we thereby are not pushing the matter dangerously to an extreme. In 1955, an army was planned which was still able to release strong forces for combat in builtup areas and

forests. Perhaps war experiences were also still too recent to be completely ignored by the successors of Guderian who pushed the ideas of the master to an extreme. Thus, more than half of the brigades organized at all (without the airborne brigades) were planned as armored infantry brigades with four battalions of combat forces of which three were armored infantry battalions.

By the end of the 1960s, the Army disposed of 13 MICV-battalions. Further, it had 28 infantry battalions made mobile by trucks or APC. However, only a few years later, there were only mechanized forces left, and the third armored infantry battalions of the armored infantry brigades had vanished. Is this how we have consummated the ideas of Guderian for mechanized warfare? Or have we carried it to an extreme in a dangerous way? Guderian had developed his concept for an army which had available the strongest of infantry forces with its numerous infantry divisions marching on foot. In addition, an equal number of tank and infantry battalions were contained in the armored divisions. By 1970, however, the number of our infantry battalions dropped from 41 to 36, and now almost half consist of MICV battalions. Further, all motorized or APC battalions are to be dissolved unless they are replaced by the newly created motorized infantry ("Jaeger") battalions. The erosion of the infantry and thereby the erosion of the capability of dominating German terrain had taken an important step forward. This took place ironically under the motto of the chief of army staff of that time which was to strengthen the army's infantry. What had happened?

One is usually wiser when looking back in retrospect. For this reason, the error is easily recognized. It was desired to strengthen the army's infantry by establishing the motorized infantry ("Jaeger") force. However, the motorized infantry formations were set up almost without infantrymen. Now, it is plain that the strength of a tank battalion is a function of its tanks and that the firepower of an artillery battalion is a function of its artillery pieces. However, when the motorized infantry force was organized, it was necessary to depart from this evident fact. An APC battalion which was reorganized to a motorized infantry battalion had to give up 145 soldiers of its peacetime strength and even 180 soldiers of its wartime strength. This was especially serious because the heavy weapons company equipped with mortars and long-range antitank weapons as well as the headquarters company had to remain practically unchanged. Therefore, the soldiers to be given up had to be taken almost exclusively from the infantry or later "Jaeger" companies. Motorized infantry battalions were created which had everything in sufficient quantity. Only infantrymen were extremely short.

Further, little was done to reduce costs and management expenditures of the new motorized infantry brigades. Typical of the situation is the treatment of artillery. Until those years, the equipment of the artillery with armored self-propelled guns was always based on the necessity that the artillery required the same mobility as the assaulting armored combat forces. Nevertheless, now the motorized infantry brigades were equipped with SP artillery. This has made the support weapons more mobile and costly than the combat forces they support. It was even sought for a long time to equip the motorized infantry battalions with an armored amphibious wheeled vehicle -- planning costs for the vehicle exceeding 200,000 DM -- instead of with UNIMOGS (cost at that time 23,000 DM) or

the armored personnel carrier M113 (cost 140,000 DM) for riding onto the battlefield. Thus we produced an expensive hybrid which many found obliged to designate as a misbegotten bastard. The motorized infantry brigades had a great deal of everything but hardly any infantrymen. The greater part of the personnel was found in the heavy weapons companies and in management. The financial cost was not invested in the infantry but in transportation and, above all, in heavy weapons. The brigade disposed of extensive, heavy and mechanized units -- armored artillery, tank destroyers, armored reconnaissance and even armored engineers. Of all things, however, motorized infantry remained little in number and still less in expenditure. Such a composition could hardly become cost effective. From a tactical viewpoint, it was a misbegotten hybrid. The tank destroyer battalions of the brigades, the armored artillery and, within the motorized infantry battalions, the heavy weapon companies, had to prefer open terrain -- just like their comrades from the mechanized brigades. The few infantrymen must have required covered terrain which to dominate, however, their number was insufficient.

This was, however, not yet enough. Under the circumstances described, the organization of the motorized infantry force would have been able to achieve at least a limited success, provided the potential release had remained with the motorized infantry units. However, the shortage of personnel and money allowed no other choice than to do the opposite of the obvious. With the reorganization of the APC battalions into motorized infantry battalions, 145 soldiers were made available. They did not remain in the brigades but were assigned to the artillery of the entire field army for organizing helicopter transport units (!) or the newly organized armored regiments of the corps. The tank battalions of the former armored infantry brigades became, with conversion of the brigades, tank destroyer battalions. Their equipment was a great deal cheaper. However, the money which was released again found its way into mechanized units outside of the motorized infantry brigades. In this way, the conversion from armored infantry into motorized infantry brigades did not increase their combat capability but attenuated it. The commanders affected must have felt cheated. How could they be expected to approve of all measures taken?

At about the same time as the motorized infantry brigades were organized, the third infantry battalions of the armored infantry brigades were being dissolved. The erosion of the combat forces continued. It was typical that the process received little notice. In this way, the battalions disappeared without sound or echo. The personnel were likewise assigned to the newly set up tank regiments of the corps, the newly organized third firing batteries of the armored artillery battalions as well as to units of the territorial army, and especially to the Home Defense Group, accordingly to the protection of rear services. The capability of our Army to defend our terrain continued to decrease.

With its already-initiated reorganization, the Army will complete the provisional last step in the direction indicated. The new organization is tactically uninteresting up to battalion level. In the future, a tank platoon will go to war with four instead of the previous five tanks.

Up until this time, the platoon was supposed to have four vehicles only on the second or third day, accordingly following the first losses. Therefore, tactically up to battalion level, no change worth speaking of.

Ever so much more important are the effects of the new Army structure on the capability of our Army to fight in German terrain. This naturally again concerns the capability of dominating the ca. 50% of the space which consists of builtup or wooded areas or is dominated by them.

Our Army originally had specified its new organization predominately on the basis of theoretical considerations. The new organization of its formations ("Army Model 4") was to be put into practice without large-scale practical testing. By the end of 1975, the Army, however, was ordered to test the new organization for a period of one year in "model brigades."

Investigated during the tactical test were among other features:

The suitability of the new organization for command and control in battle,

Capabilities as well as advantages and disadvantages of the combat organization,

Combat effectiveness with respect to the enemy -- capabilities of detailing, leading and utilizing reserves,

Capability of executing general tasks such as reconnaissance and combat security.

After the conclusion of testing, the statements concerning the suitability of the model brigades for combat in settled, cluttered, or broken terrain were caveated in that they were based more on theoretical considerations than on practical experience. This is worthy of note. It appropriately illustrates how widespread is the viewpoint in our Army that all covered areas have little tactical significance: we find five brigades being tested for an entire year at the highest instance to establish the tactical suitability of a new organization. Numerous exercises take place of companies, battalions, brigades and divisions as well as one corps exercise. Terrain conferences and war games augment the comprehensive investigations. However, the covered areas, perhaps half of the terrain, remain out of consideration. Typically, not one of the superior officers saw an opportunity or the need to intervene to make a correction. This is not astonishing for those who know our Army and indeed the Armies of NATO. As a result of a silent concurrence and widespread myth, broken, builtup terrain is not only difficult for our completely mechanized armies but is also tactically uninteresting. The attacker will not use this terrain (86). Who doubts this myth reveals a lack of true armor spirit and has not understood Guderian. Perhaps, it is also not true that it was precisely Guderian as well as Hoth and Reinhardt who attacked in 1940 with their armored corps, of all things, right through the Ardennes and thereby achieved one of the most rapid and least bloody victories of recent history.

Of course, perhaps our enemy is not blind. Perhaps, he reads our military periodicals and evaluates our maneuvers. In the same way, in which we read and evaluate his. Then he knows of our myth. Hopefully, he respects it. Indeed, he is not without experience in the conduct of armored operations. Perhaps, we should also entrust to him the obvious finding of our manuals that the enemy expects to be opposed by tanks in terrain favorable to tanks. Perhaps, he draws the same conclusions as our manuals according to which "it is often more advantageous for the attacker to utilize less favorable terrain and detours off the main highways if the enemy can be surprised thereby" (87). One wonders if we should really assume that commanders of the Warsaw Pact are dumber than our manuals? What happens when they are just as intelligent and for this reason, utilize that terrain which was simply excluded from perhaps the greatest troop test of German military history? (88)

All the same, even the testing of five model brigades in predominantly open terrain only has led to noteworthy findings. The combat effectiveness of a MICV battalion in forest, builtup areas and cluttered terrain has been proven to be greatly restricted. This is probably an accurate conclusion. If, of course, elicits the question as to who is actually to fight in these areas when even the armored infantry finds their combat effectiveness there greatly restricted.

It proved to be necessary to provide the armored infantry with a reinforcement of infantry components at night and in cluttered terrain. This after all amounts to 50% of the time and 50% of the German terrain. In the case of the armored brigade, the infantry reinforcement at night (together with periods of poor visibility about 50% of the time), in cluttered terrain (50% of the area) as well as in defense (in view of the strategic defensive, our first combat mode) was even proven to be inevitable. One saw himself forced to the conclusion that maintaining an effective infantry component for augmenting and even reinforcing the mechanized brigades was urgently necessary and unavoidable. Corrections accordingly had to be applied. This was despairingly difficult because the personnel size of the Army is limited, and every available man has long since been planned for and, accordingly, made available for a troop unit. As a single important measure, two additional infantry battalions were made available for each of the 11 divisions (the airborne division can remain out of consideration here). However, at the most four, perhaps even only two, of these 22 battalions can be organized in peacetime with some active personnel ("cadre"). Most battalions are only "equipment units". Their equipment is stored in depots and the personnel are to be inducted in good time before outbreak of war.

The tactical testing of the new army's structure has revealed that an effective infantry reinforcement is "mandatory" and "unavoidable". The results are reservists in equipment units. These men are of all things, destined for the most difficult of all combat types, combat in builtup and wooded areas by day and night. Amateurs at best, without inner cohesion set against professionals in closely-knit units. Is this really the mandatory capable infantry component which all test reports required? Is it possible to take responsibility for employing such units for forward defense in the field army without prior additional training?

The corrections which could be applied on the basis of model testing on the Army and its structure should not be taken too serious. The personnel is lacking for more drastic measures. Little more than a cosmetic operation is possible. The doubt whether our Army in its new structure is better suited for our terrain than the previous Army can still be based in the testing of this very Army structure.

#### A SONG OF PRAISE FOR OUR ARMORED FORCES

Guderian created the German armored forces. He thereby helped to popularize the idea of major mechanized units throughout the world. Many of those officers who have built up our Army and our combat forces experienced Guderian and often even knew him personally. At least, many of them took part in the heady successes of the first war years in the armored and armored infantry divisions of the Wehrmacht. No wonder that these experiences and events became strongly imprinted and deeply affected the beginnings of our Army.

The great successes of Guderian's ideas easily allow us to overlook what price had to be paid by which forces and where the ideas were further developed on the basis of wartime experiences. Those who at that time advocated the "infantry" tank have been contradicted by history. They harvest today only scorn and ridicule. In this regard, a comment is, however, necessary: The proper rejection of infantry tanks of an English-French type, the proper concentration of all available tanks into only nine tank or mechanized divisions left in 1939 altogether 94 and later on still many more divisions without tanks. Any direct fire support was lacking these divisions in the attack. Worse still: At the latest with the appearance of the first T34 tanks in June-July 1941, their antitank defense turned out to be completely inadequate. The infantry tank had to be introduced now -- in the form of the assault gun. Guderian's solution had proven to be a strike of genius but also as the poor man's solution (89).

The lack of attack and above all antitank capability of the infantry divisions has been detrimental to no one more than our armored forces. Any look into division histories shows that the tank divisions had to be employed often for months at a time for the defense of static positions and lines and even often enough found their tanks distributed in platoon or company strength to wavering infantry divisions. Each time this represented an infraction of tactical principles in a necessity which knew no law. In this way, our armored divisions were used for tasks for which their perception of themselves and above all their armament and equipment were not appropriate and for which they actually were too good. The reason clearly lay in the lack of antitank capability and, consequent to this lack, occasionally in the lacking moral staying power of the infantry divisions.

The Bundeswehr was able to build its army under quite other auspices. Infantry divisions without tanks fortunately never were considered. There were only armored and armored infantry divisions which were, however, only different in one single battalion. In addition, the past and its events continued to have effect. Granted that some of us may have here and there found an "armor spirit" which already Clausewitz described from the attack and from movement and appear to see in the hussar, dashing forward swinging his saber over his head, the proper image of warfare" (90). It occasionally appears as if the ideas of Guderian are being less further developed than carried forward in a straight line and pushed to extremes. This has brought disadvantages for our Army. However, there are also great advantages. One of the greatest advantages consists in that we have organized an armored force, a mechanized infantry and mechanized brigades which could be the envy of all our allies. Our mechanized brigades would be ill-advised to exchange weapons, equipment, material or operational doctrine with those of our allies or even with those of the Warsaw Pact. They will prove to be outstanding when used appropriately and in suitable terrain. These are certainly the best brigades which are to be found among mechanized forces of the world.

What will these brigades accomplish and where should they be employed? In open terrain, the tank has found a dangerous opponent in the guided missile. However, open terrain can even today be defended only by mechanized forces. The tank is and remains the king of open areas. In addition, in view of the effect of modern weapons, an attack is only possible under armor protection. Consequently, the tank is and remains the only weapon which can attack, break through and be used for exploitation. Accordingly, armored forces will alone decide the battle in all open spaces of the Federal Republic and must alone carry out attack operations. In the case of defense in more covered terrain, intervention of mechanized reserves will represent a climax of the battle.

Our armored and armored infantry brigades have an unlimited suitability for these tasks. The differing ration between tanks and MICV makes it possible to adapt them to the terrain, to use armored brigades in open terrain and armored infantry brigades in less open terrain. Equipping MICV and tank destroyers with antitank guided missiles makes the brigade suited for battle at long range. The support by an armored artillery battalion should be sufficient in normal cases and, in addition, the fire can easily be reinforced by neighboring units or the division.

Such a major formation is almost ideal for combined arms battle. It joins the potential of the MICV infantry, tanks, armored artillery, tank destroyers, armored engineers and often armored anti-aircraft and certainly also armored reconnaissance. The weakness of one service branch is compensated by the strength of another. It is conceded that space is required for use of this great potential. Already in the Second World War, it turned out that the losses of an armored unit rapidly rise on an absolute and relative basis the smaller the unit. A tank attack against a strong opponent today today needs space for combined arms combat -- or an opponent

occupying large areas with an unsuitable formation and, for this reason, making an inadequate defense. For an attack against a watchful enemy, much space is required so that combined arms combat can be carried out and that the attack does not run into a wooded or industrial zone after a minimum gain of space. The meadows between two patches of forest, the cultivated land between two buildup areas are hardly sufficient for this. On the other hand, if this space is available, the commander has an instrument of greatest effectiveness joining extreme flexibility, high mobility and strong firepower whose performance will impress the participants and carry them along.

#### A SONG OF PRAISE FOR THE INFANTRY

Any tactical investigation today necessarily leads to the question as to which antitank capability modern infantry with modern weapons and suitably organized will have in German terrain. The question has long been decided for the official Army. The best weapons against enemy tanks are our own tanks. This viewpoint has been repeatedly expressed by our former chief of army staff and has been echoed by subordinate echelons.

In 1979, this is an amazing statement. Our own tank will always feature similar performance data as an enemy tank. It is not optimized to exploit weaknesses of the tank. Instead, it must always set its own performance "frontally" against that of the enemy tank and, in addition, let us call things by their name, with a crew which was trained for only 15 months instead of 24 months as in the case with most countries of the Warsaw Pact. In addition, there are weapons which cast further doubt on that official doctrine. Against faraway enemy tanks we prefer to use a guided missile since the missile is clearly superior to the gun at great ranges. With short ranges and poor visibility, extremely expensive weapons have good possibilities of destroying tanks. After all, our former chief of staff himself compared the deterrence effect of modern precision weapons with those of nuclear weapons. It is difficult convincingly to conclude therefrom that our own tank is "certainly" the best weapon against an enemy tank (91). Is it rather not valid that we require a concert of weapons ranging from the rifle grenade to the antitank helicopter in which, depending on the terrain, the individual weapons take their turn playing first fiddle?

The principle that the best antitank weapon is our own tank may perhaps have been correct when, outside of tanks, there were only a few immobile antitank guns as antitank weapons. The principle is questionable today. But, its preservation has led to a glaring neglect of antitank weapons. Characteristic of this are the MARDER and LUCHS. They are by some margin the heaviest, most expensive and even the largest MICV of armored reconnaissance vehicles of all armies. However, they must immediately take to their heels when faced with any enemy tank since they were introduced without even the suggestion of an antitank armament. This at a time when the enemy has tanks available at any time and everywhere and every motorized rifle regiment of the Warsaw Pact has a tank battalion whose companies are normally assigned to the motorized rifle battalions. At present, a great many MARDERS are being retrofitted with



with MILAN after half of their service life has passed. Reputedly, the number of retrofitted MARDERS is only as high as it actually is because a minister lost patience and drastically increased what had been requested by the Army. The LUCHS, however, can only lay smoke and attempt to disappear as quickly as possible when confronted by any MICV or by any enemy tank at rather long ranges.

When Fuller, Liddell Hart and Guderian laid the basis for tank tactics between the two World Wars, the antitank power of the infantry was based exclusively on antitank guns. For this reason, even in villages and forest, the antitank power of the infantry was slight since most infantrymen could only helplessly witness the duel of enemy tanks with their few own antitanks guns.

Nevertheless, it should give us cause for reflection that the Wehrmacht awarded 10,000 antitank close-combat badges (92). At least 10,000 tanks were destroyed with close combat resources although these consisted only of makeshift means almost until war's end. After the war, Guderian soberly stated therefore: "Tanks are hardly suited for combat in villages and not at all suited for combat in cities... The enemy finds cover everywhere with his close combat weapons which are difficult to detect... Combat in forest is similar to combat in builtup areas. Tanks are just as little suited for this." (93) Guderian concluded that the "main work" in builtup areas and forest must be left to the infantry. At the very most, individual tanks could support them on an "assault gun basis." Then follows an interesting sentence: "The other tanks keep in readiness to defend against possible counterthrusts of the enemy."

Our manuals reflect the wartime experiences including the views of Guderian as well as our insights acquired since then. According to them, the tanks even in open terrain should only attack ahead of the MICV when "no or only a few" enemy antitank hand weapons are to be expected (94). Now, it should hardly be assumed that the motorized rifleman will throw himself defenseless into our attack on the open meadow. The Russian soldier has, from time immemorial, dug in well and fast. The motorized rifleman will either install field fortifications or defend himself in more favorable terrain. Accordingly, there remains only one single case in which the tank leads the attack and MICV follow: in open terrain, "as long as tanks or long-range antitank weapons of the enemy have to be neutralized." Even here, much could change since the MARDERS have been equipped with the MILAN.

In all other cases, the MICV-infantry leads the attack, either mounted or dismounted. The difficulty of the tasks assigned the weak infantry formations of our divisions can be seen from this. Infantrymen lead the attack generally in cluttered terrain and naturally when approaching obstacles, builtup areas or forests, whenever the enemy could use antitank hand weapons in cluttered terrain, and when the enemy defends field fortifications or when antitank gun defense lines are to be penetrated. Tanks and MICV infantry may attack side by side in some situations. In the above mentioned tactical situations, however, the "following" tanks "support" the attack of the infantrymen. This was called "like an assault gun" by Guderian. Seldom the tank pulls the

infantry forward. It usually provides covering-fire and shoves them forward. If the terrain is open to some extent, the "commander's" decisive weapon" (95) supports the infantry at least by its heavy fire-power. The tank must leave the infantry almost alone in built-up areas and forests as well as in terrain dominated by them, about 50% of the German terrain. The infantrymen then execute what Guderian called the "main work" whereas the tanks make themselves "available for repelling possible counterthrusts of the enemy." This is none other than a euphemistic circumlocution for the fact that, in a good part of Germany, the "commander's" decisive weapon cannot be sensibly employed.

The infantrymen accordingly stand alone in many situations and wide areas. Tasks are assigned to them which cannot be coped with by the weak infantry units of any army which has oriented all considerations to mechanization and, in this case, to the main battle tank. Moreover, the consequences of our regulations are becoming clear. They support the view that our mechanized divisions could not be employed in great parts of the Federal Republic in such a way that they can justify their immense expenditure for personnel and material. The question of course, then again arises as to whether our tactical regulations and our Army organization are still consistent with one another.

The role which the tank can play in more covered terrain has considerably changed since the Second World War. The operational doctrines of tanks and MICV infantry only reflect this change. The causes do not lie in an increased effect of ammunition on the target -- the hit of a 7.5 cm antitank gun on a T34 tank has no lesser effect than the hit of a heavy Panzerfaust or a TOW on a modern Russian tank. The effect of the antitank gun was presumably even essentially greater than that of a rifle grenade (HEAT). However, in the summer of 1943, the German infantry divisions on the Eastern Front still only had 9-10 antitank guns for antitank defense at more than the shortest ranges. Most soldiers were helpless when faced with a T34 tank until the enemy tanks broke through to the artillery. It was only in close combat that they could use a number of primitive explosive ordnance under conditions of maximum danger to themselves.

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A fundamental change has occurred here. Each squad of our Army has available a Panzerfaust which travels a great deal further than those Panzerfausts which were introduced toward the end of the Second World War. Each armored infantry battalion today has three times more antitank weapons for medium and long ranges (MILAN) than earlier could be used by an entire infantry division. The antitank defense accordingly has not become so much more effective than it has become a great deal more numerous. "The vulnerability of the tank has been increased by a multiplicity of armor-piercing weapons" specifies our command regulation (96). The few antitank guns could still relatively easily be reconnoitered by an attacker and then destroyed or at least neutralized by fire. This will be prevented today by the great number of modern antitank weapons and all the more since many of these weapons only feature a slight firing signature, so that their positions or the positions of their missile gunners can not easily be reconnoitered.

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Thus, the antitank power of modern infantry has mainly been enhanced by an increase in the number of weapons. The increase in range and hit accuracy, the tactically quite important decrease in the firing signature as well as a very high mobility of many systems make their contribution. Naturally, it would be unreasonable to assume on this account that the tank is obsolete. However, in order to overpower a modern antitank defense, there is more required than neutralizing nine or ten antitank guns on an entire division width. The requisite potential can only be brought to bear by units carrying out combined arms battle. A great deal of space is, however, necessary for employment of such units. The smaller spaces can be dominated today by the infantry. Indeed, if this infantry is not present, it is possible for any attacker to even pass through spaces favorable to infantry and unfavorable to armor without any considerable danger to himself.

1. Division fortifies quarter tank
2. Tank goes large unopposed
3. VT ammo for a try
4. Tanks further

not clear overall equation is much different