Although the talks in Vienna now have stretched out for a period of more than six years a result is not yet in sight. Negotiating staffs meanwhile have a fixed TOE with cynics speaking of lifetime jobs. An esoteric terminology understandable only to the specialist has been created. The issues under debate are clear only to the experts and difficult to understand even for a politically interested amateur. Easy to understand that some politicians become impatient and play with the idea to courageously cut through the Gordian knot by means of what they call a political initiative. Easy to understand also that the motives of these politicians are most carefully examined and are commented on sometimes in a friendly and sometimes in a less friendly manner. Evidently there is a danger that MBFR negotiations will be drawn into position battles within political parties, into electoral campaigns and into domestic political controversies. This may occur although it has seldom been advantageous if foreign and security policy was dominated by domestic or even party politics, accordingly by factors which had little to do with the issue at stake.

What are the causes of the difficulties in Vienna? Despite many warming voices, negotiations were and are carried out directly or indirectly ("Option III") on the basis of NATO and Pact personnel strength. Personnel, not equipment in general or as regards specific items, is the point of departure for all considerations including the variant of Option III. This has opened a Pandora's Box:

1. It is even not at all easy to determine how strong NATO forces are in a specific area and at a specified time, last not least since many countries have paramilitary forces such as gendarmerie or border guard troops concerning whose inclusion or exclusion there can be much controversy when this is sought or at least not shunned. However, to determine the personnel strength of Pact armed forces, and to prove these figures to the negotiating partner, has so far been impossible ("Data discussion").

2. Nothing is easier than circumventing personnel restrictions, especially if they involve one service of the armed forces only and especially for the closed system of the Warsaw Pact with its lack of public control mechanisms. The possibilities are almost unlimited. Army personnel are reduced - consistent with the agreement - the tasks of withdrawn units are shifted to newly organized units of other services, paramilitary units or even civil organizations under government control. Units specializing in transportation, engineering, repair, communications and air defense open up a wide spectrum of possibilities. Hardly any limits are placed on inventiveness. Circumvention of treaty obligations is difficult to verify. It would even be more difficult to convincingly prove that circumvention first to our NATO partners and then (without betraying our sources of information) to Pact countries. Even the possibility to enter barracks for counting personnel, unattainable anyhow, could not help here. Therefore, in carrying out the provisions of an agreement and in the determination of personnel currently present, NATO probably will have to more or less blindly trust the validity of data from the Warsaw Pact. Without having adequate capabilities for controlling these data. Hardly a comforting prospect.

3. For NATO, personnel strength is exceedingly unfavourable as a negotiating basis. For various reasons, the Warsaw Pact can, with the same personnel, field more weapons than NATO. Even if they have the same personnel strength as NATO, the Warsaw Pact would therefore retain its superiority and offensive power. It is amazing that NATO selected, of all things, personnel as the basis for negotiations and as a scale for reductions - naturally without coming up against objections of the Warsaw Pact.

4. The last birth defect of our negotiating position: Personnel reductions reduce not only the offensive capability but the defensive capability also, theoretically even to the same degree. However, this is a heavy burden in view of the deeply rooted and hardly unfounded mistrust between the blocs. More promising and desirable would be a negotiating strategy which reduces the offensive capability only but leaves the defensive capability undiminished.

Thus, it is not incidental that negotiations have failed so far. In the meantime, many dreams have come to naught. Hardly anyone still speaks of the original hope, to achieve equal security for both sides at a lower level of armed forces. There is hardly any hope of relieving our peoples of some of their "senseless" armament expenditures. What is presently discussed will lead, at best, to small personnel savings in NATO when the treaty has been ratified. Considerable financial savings are improbable.

Prophecies are difficult to make. At any rate, there are good reasons for assuming that a first MBFR - treaty will not call for substantial changes.

An agreement concluded in this way will satisfy a few politicians and will provide others with opportunity for criticism. Possibly, people in the West will feel more secure than before - presumably without reasons, as far as MBFR is considered.

The essential reason for the difficulties which almost exclude substantial progress even with the good will of both negotiating partners should be sought at the starting point of negotiations: "No method of assessing armed force in terms of figures is likely to satisfy all parties. Even if some limitation, perhaps even some reduction in categories were to be accepted grudgingly by the participating powers, such fractional modification of the existing armed forces would be too slight to increase the nation's sense of security. Moreover, the effort might well cost more than it was worth because of the friction generated in the prolonged statistical arguments." By these words, almost 50 years ago Sir Basil Liddell Hard evaluated the disarmament negotiations which took place on the basis of personnel strength in Paris 1931-1932. The British Government commissioned him to find out why the negotations were stagnating and to work out proposals (118).

Already during the preliminary talks which preceded actual negotiations, the disarmament talks of the 1930's threatened to bog down in controversies the experts. A special terminology had evolved which only the initiated could understand and which was no longer understood by the public. This increased the danger that politicians would set aside the esoteric arguments, motivated by domestic or financial pressure or even by euphoric hope. The differences at the conference tables also contributed in no way to an improvement in the relations between countries. "When I was lunching with Sir Maurice Hankey in November, he had expressed to me his foreboding that the Conference would aggravate national rivalries and suspicions. The cynics were saying: 'We shall be lucky to get through a Disarmament Conference without a war.'"

The Vienna talks have so far not been any more successful. Desirable is a new negotiation strategy which:

> Either leads to a substantial result acceptable to both sides which satisfies the hopes of countries for detente and a lower armament effort,
>
> Or surfaces for all to see which of the negotiating partners is avoiding any substantive result
>
> and, at the same time, plausibly presents the problems involved to our public.

These goals can only be achieved if we are aware of the fact "that the only effective approach to the disarmament problem lay in finding a radical solution that would transcend all bickerings about numbers and numerical ratios." Liddell Hart has already proposed such a solution as early as 1931. It begins with the indisputable fact that - in view of the tremendous effects of modern weaponry - no country is threatened simply by the other side's personnel. Offensive capability presupposes armor protection. Accordingly, the problem is not how to reduce personnel strength but how to reduce the capability to attack or to carry out an aggression. The goal which, at least the West tries to achieve - equal security for all at a lower level of armament - therefore is easier to achieve by the reduction of tank inventories than by personnel reduction which is burdened with the many fringe problems already outlined.

Probably it would be difficult to get NATO nations to agree to the new approach. The gigantic apparatus of NATO command authorities, which again depends on large national bureaucracies, is not easily moved to leave well-beaten tracks. On the other hand, discontent with the results so far achieved in Vienna is widespread. Widespread is also the fear that in the West MBFR will become responsive to domestic political pressure and nonprofessional auspices. Finally, it is worthy of note that one of the highest NATO commands requested years ago that NATO consider the ideas advocated by Liddell Hart.

By a drastic reduction of tanks "the offensive capability of armies would be reduced to a very low level. The defense, on the other hand, would remain strong enough to deter any aggressive neighbor and any thought of invasion." The important and proper controversies (which are almost incomprehensive for outsiders since they involve esoteric data criteria, national ceilings and sub-ceilings, verification methods, collectivity, verification results, circumvention etc.) could be avoided. This is true because "numbers of men may be 'camouflaged' in various ways ... but, for practical purposes, a ban on ... tanks is an effective ban. Even if such bulky machines could themselves be hidden, their value would be slight unless crews could be trained to handle them in gunnery practice and field exercises. Hence the risk of bad faith is reduced to a minimum." Certainly, this risk is much smaller than in negotiations based on personnel data which, for all practical pruposes, can hardly be verified.

The solution described takes into account the security needs of both sides. The drastic reduction of heavy armored combat vehicles destroys the capability for aggression. On the other hand, the defensive capability is not only left at its previous level, but is even enhanced versus the unarmored forces of the other side. Therefore, "the problem of limiting effectives, trained reserves etc. becomes as immaterial as it is already insoluble. For by the abolition of ... tanks, armies can be reduced to the state of men in armour without swords." The almost insoluble problem of ascertaining the personnel level of Pact forces in a specified area, of verifying its reduction and proving a possible circumvention is solved. Personnel numbers are unimportant. Only numbers of tanks have any significance. Modern reconnaissance means, however, allow to determine the presence of tanks whenever they move out of their sheds. Verification of numbers of tanks is at least much easier than verifying numbers of personnel.

The indicated solution would reduce the capability of the Soviet Union to intervene with its satellites. However, not so drastically that the new negotiation approach would be unacceptable to her.

The new approach would have one more advantage. It would remove a serious deficiency of the present approach which has hardly ever been mentioned in public discussions. There are narrow limits for any reduction of personnel serving in NATO forces. These limits result from the defender's need to continuously dominate the terrain by fire. Under no circumstances can a strategy of forward defense dispense with this capability. Initially, a percentage reduction of personnel may reduce the defensive capability by the same percentage only. However, if ultimately it leads to a situation in which the defender has not enough forces to continuously dominate the terrain by fire, defense capability overall collapses. Our Chief of Army Staff stated in public that "the forces held in immediate readiness by NATO are already at the threshold of acceptable risk." Therefore, we "have either the choice of making available the forces required for a complete coverage of operation areas or we will have to develop a new strategic concept." The reference to MBFR is immediately brought up: "If we agree - perhaps at disarmament negotiations - to a force ceiling lower than the requirement for defense, the strategic concept which provides for our security under changed conditions must be developed beforehand." (119).

This means: larger MBFR force reductions will force us to accomplish the almost unthinkable step to dispense with flexible response or with forward defense or with both. These are no comfortable prospects even for those who believe that MBFR negotiations should be continued on the basis of personnel strength. Admitted, the consequences of "MBFR 1" may still be bearable in this respect. However, does not the history of SALT and the history of the Conference for Security and Cooperation in Europe indicate that further rounds could follow this first treaty round? Would not the desire for detente and for a truly perceptible relief of countries from armament expenditure make "MBFR 2" even desirable? Must we not be afraid, however, that with agreements on the basis of personnel strength, our defense capability at the latest with "MBFR 2" will drop below that level believed indispensable by our Chief of Army Staff? Already years ago one of the very highest NATO agencies officially requested that, precisely for these reasons, MBFR be converted from personnel to tanks.

A possible offer of NATO to Pact countries, accordingly, could read as follows:

> In a specified area, we waive a large, specified percentage of our heavy armored combat vehicles
>
> if the Warsaw Pact does the same thing
>
> Otherwise and elsewhere, everyone can do what pleases him.

If negotiations succeeded on this basis, very large savings would immediately result because exactly those items would have to be reduced which are most costly in modern armies. Moreover, such an offer would have the advantage that we could explain it to our democratic public more convincingly than our present approach which characteristically in 1931 has led to those difficulties which we encounter today. At that time, Liddell Hart proposed his new negotiation approach to the British government which officially adopted it. However, negotiations came to naught since France would not cooperate - hardly to her own advantage, as the coming years were to show.

From all this, a number of conclusions result for the topic of light infantry:

> The original goal - equal security at a lower level of armament - can hardly be reached with today's negotiation approach.
>
> Hardly more can be achieved today than results which hardly differ from cosmetics and, in addition, presuppose concessions to be made by the West, primarily on the data issue.

Greater results, i.e., larger personnel reductions, are undesirable since they would reduce NATO ground forces below the level required for successful defense.

Substantial results are desirable, but they will only be possible if we aim not at reduction of personnel but at reduction of offensive capability.

Such a new approach would drastically reduce the mechanized units of armies in favour of their infantry components.

The concept of light infantry, accordingly, conforms to requirements which might arise from MBFR agreements.

Light infantry and the new MBFR approach discussed here would leave, after initial reduction of mechanized units ("MBFR 1"), the margin necessary for further similar measures ("MBFR 2").

POLITICAL AND MILITARY - STRATEGIC CONSEQUENCES

Strong infantry units would increase the peacetime effectiveness of our Army. Thereby, they would have a further effect on the military-strategic and political areas.

At present and in peacetime, it only appears as if our Army were fully ready. In reality, it is completely dependent on the large service support units of the High Command. However, personnel and equipment of these units must be mobilized. Some of these units are very complex entities which will require considerable time until they are ready for their task. The magnitude of personnel and equipment to be mobilized creates a very difficult scheduling problem. If the service support units are mobilized late, perhaps only when war started, they will not be ready in time. Our combat troops will then soon collapse owing to lack of service support.

On the other hand, our political masters must hesitate to mobilize service support troops at an earlier stage. Their mobilization then occurs in a time when the danger of war is imminent. At that time (hopefully) already many other units are being mobilized, especially the mobilization units of the field army and those units of the Territorial Defense which are necessary for the deployment to war stations of the field army. The large scope of these measures could accelerate a political crisis and could encourage domestic unrest. Our politicians will hardly be enthusiastic when we require them to approve also the mobilization of our extensive service support units.

But it is precisely the large scope of the measures required which excludes an even earlier mobilization. Mobilization of personnel and equipment has a very deep effect on the civilian life and, above all, on the economy of the country. Severe disturbances are almost unavoidable if the crisis lasts longer. If the crisis should even die away without leading to war, there will be many who would criticize our government for having mobilized too early. Besides, consequences result from the fact that NATO has more than once given credible assurances that it would never carry out a preventive or preemptive strike but would always allow Pact countries to fire the first shot; owing to its structure, NATO could not act in another way. This opens many possibilities to a resolute enemy. Without any risk and by well-apportioned measures only, he can impose long-term or even repeated mobilization upon NATO. The economic and domestic consequences would hardly be pleasing.

Thus, in any political-military crisis, our political masters have good reason for dreading early mobilization and for avoiding mobilization in a later, already dramatic, crisis. Full mobilization of our armed forces will only then be easy and will only then be unproblematic from a domestic as well as from a crisis management viewpoint when it comes too late. Thus, a dilemma is delineated: our political masters have limited the Army's size so that without mobilization our Army is not combat-ready. Certainly, this obliges them to order mobilization at the time required. In a crisis, it will, however, not be easy for our political masters to fulfill this obligation. Naturally, we will point out to them that mobilization is also a step in crisis management and that one can hardly provoke power blocs which enjoy the force superiority Pact forces do enjoy. However, will not refer to the disastrous automatic process whereby before World War I mobilization of the first country drove all countries into war?

It is in the interest of our Army to decrease its dependency on mobilization. In addition, it is in the interest of the political leadership to regain at least some part of the freedom of action it lost. To regain its complete freedom of action is neither possible nor desirable. Different levels of operational readiness are adequate to our situation, and we require mobilization as a means of crises management. However, a limited relief of our political and military leadership would be an advantage.

Accordingly, we need forces which do not depend (when war starts) on a well functioning resupply organization. Mechanized forces are poorly suited for this purpose, due to their large requirements for service support. Owing to their large requirements for ammunition, POL and maintenance/repair, they will always depend on large service support units. The size of the troops required is so large that it would hardly be possible to keep them on active peacetime duty. Accordingly, mechanized forces will always be dependent on troops which must be mobilized.

Owing to their minimal requirement for service support we therefore need units which:

- on the one hand reduce the requirement for service support units which must be mobilized
- and, on the other hand, are able to carry out a defense mission for a limited time without the support of mobilized support units.

The supply requirements of these units must be so small that they can be satisfied by resources already available in peacetime until mobilization and deployment have been completed under their protection.

These requirements can best be fulfilled by light infantry units. They do not depend on the functioning of a large supply organization. Their minimal supply requirements can be covered for considerable time by resources already available in peacetime.

FINAL REMARKS

Every army is a complicated and sensitive organization which tolerates neither frequent nor sudden changes. Accordingly, an army necessarily inclines towards what exists and what is familiar. For this reason, it would be undesirable if the writings of a single person could modify the structure of an army or even intended to do so.

The first task of this work, consequently, cannot have been to initiate a change of our army organization. Rather and above all, this work was written to support the belief that the present path has led our army into a blind alley. This is true tactically because the problems caused by villages, cities, industrial zones, forests and highlands, i.e., by about one half of Germany's terrain, can no longer be solved. Logistically, because the large service support units suck the blood from our combat troops, can no longer be protected and are too vulnerable. Financially, because the combat troops are so expensive that we can raise only a fraction of the divisions we would require and are even unable to provide these divisions with sufficient wartime stocks. Politically, because the compulsion for early mobilization restricts the freedom of action of our political masters. And finally strategically, because it remains highly problematical whether the army will ever obtain the urgently required time for extensive mobilization.

In addition, there can be little doubt that the strong development of military technology has made obsolete all tactics and army structures which were derived from WW II. A drastic development, far beyond the last war, is accordingly necessary. Otherwise, we may find ourselves,

just like the British and the French in 1940, happy to possess modern weaponry while retaining tactics and structures of a past era. Therefore, there must be no doubt that the technical developments which have appeared since 1945 require a corresponding development of tactics and organization. Where this development will lead to, may, for the time being, remain an open question. Perhaps it will actually lead in the direction indicated in this study, viz. to restricting mechanized forces to open areas, to a new arm for the defense of covered infantry terrain, and to tactics, organization, armament and equipment of this new arm as has been offered for discussion in this study. Assuredly, other solutions are conceivable and can be supported by powerful arguments. When this work elaborated a solution down to a great many details, it was guided by the desire to offer more than criticism only. In order to promulgate the discussion, it may be useful to offer a solution, although it can hardly be possible to develop in the first attempt the doctrine, organization, armament and equipment of a completely new arm. Both criticism of the solution proposed and the elaboration of better proposals are needed. The ultimate solution of the problem raised in the Central European battlefield by our Army's reliance on high technology exceeds the capabilities of a single person. It must be based on comprehensive studies of a great many experts as well as the practical testing of solution models.

FOOTNOTES

1. Cf. H. Guderian, Erinnerungen eines Soldaten (Remembrances of a Soldier), Heidelberg, 1951, p. 78 ff. L. Beck, Studien (Studies), published by H. Speidel, Stuttgart, 1955, pp. 81-84.

2. After the last Middle East War, the author had to prepare in the Defense Ministry the final version of a comprehensive and detailed study concerning the lessons of this war for the Bundeswehr. He submitted the final product to one to the highest generals of our Bundeswehr with the oral recommendation that he "take the study with tongs and throw it away unread". The source situation was so uncertain that any desired conclusion could be supported. For the researchers with the Army, Navy and Air Force, it was obvious to draw the conclusion that the concept of their services and their own chief of staff had been proven to be correct in important points. If they had nevertheless come to another conclusion, their contribution to the study would hardly have been coordinated by the other branches on their staff. Studies of such a type find it hard to provide another result than confirming in important points the concept, organization, tactics, training and armament of the service concerned. Organization and mode of operation of large bureaucracies and ministries are suited for command, control and administration and at best secondarily for the development and implementation of innovations. From this result conclusions with respect to the capability for innovation of these large organizations which are supported by the history of the armor concept in ministries of all nations before the Second World War. Of course, it must be seen that large-scale organizations can only in this way protect themselves from poorly thought-out innovations which could possibly have catastrophic consequences.

3. The battles in question were described in detail in the Official American Work: R. Appleman, United States Army in the Korean War, Volume I: South to the Naktong, North to the Yalu; Office of the Chief of Military History, Department of the Army, Washington, 1961.

4. Personnel Data according to the U.S. Army in the Korean War, p. 267, Footnote 6.

5. The Far East Air Force flew 7400 sorties in August 1950 only for close air support of the Army. The great many sorties of the Naval Air Arm generated by a number of carriers operating off the coast are presumably not contained in these figures (R. Futrell, The U.S. Air Force in Korea, 1950-1953, New York, 1961, p. 129).

6. The American official history is hard to understand here. A table of all North Korean units gives the Sixth (NK) Infantry Division for 5 August 1950 (start of the North Korean offensive) only a total of 3,600 men, and it gives Infantry Regiment 83 subordinate to it a total of only 1,000 men. Directly following this, the battle is described. At this time, the work gives the strength of the Sixth (NK) Infantry

Division as 6,000 men and Infantry Regiment 83 with 1,500 soldiers, an essentially higher figure. An explanation is lacking. The quality of the work excludes manipulation or even deliberate misleading of the reader (U.S. Army in the Korean War I, pp. 263 and 269).

7. W. Hermes, U.S. Army in the Korean War, Volume III: Truce Tent and Fighting Front, Office of the Chief of Military History, Department of the Army, Washington, 1966, p. 512.

8. "I suspect that, on balance, technology has hurt us more than it helped us in Vietnam, because it confirmed us in trying to find better ways to fight the war our rather than the Vietnamese way. If, instead of the literally billions we spent on new technology, we had listened to the advice of ... nontechnologists all - I think we would have done much better tactically in Vietnam". R. Komer, former political advisor of General Westmoreland with the rank of Ambassador, 1979 Special Advisor of U.S. Presidents for NATO Matters, in: The Lessons of Vietnam, published by W. Scott and D. Frizzell, London and New York, 1977, p. 177 ff.

9. By the end of May 1944, the German Reich had 14.2 million male German civilian workers in additon to 14.8 million females as well as 7.1 million foreigners and prisoners-of-war. In contrast to this, there were only 9.1 million Germans in the Wehrmacht (H.A. Jacobsen, 1939-1945, Der Zweite Weltkrieg in Chronik und Dokumenten (The Second World War in Chronicle and Documents), 5th Ed.,Darmstadt, 1961, p. 561).

10. In 1743, excluding supernumeraries (replacements) in a Prussian Infantry regiment were 50 officers, 118 NCO's, 240 grenadiers and 1140 riflemen. There was, in addition, a regiment quartermaster, auditor, chaplain, provost, gunsmith, gunshaftman, regimental drummer and a regimental doctor. Further, there were 12 company medics, 37 drummers, six oboists and six fifers (C. Jany, Geschichte der Koniglich preussischen Armee (History of the Royal Prussian Army), Berlin, 1928, p. 84).

    The cuirassier regiment of five squadrons had 32 officers, 60 NCO's, 660 cavalrymen in addition to a drummer, headquarters trumpeter, regimental quartermaster, field chaplain, regimental judge, provost, saddler and a regimental medic, further five squadron corpsmen, 10 veterinaries and 10 trumpeters. The Dragoon regiments were similarly organized. The Hussar regiments had considerably more personnel with a similar headquarters organization. The ratio between combat and noncombat personnel was accordingly even more favourable (Jany, Ibid.). Furthermore, it is to be noted in the case of percentages for 'fighters', that bandsmen were counted among the concombat troops against which many objections could be validly raised.

11. The Prussian Army had, in 1743, an assigned strength of 123,474 men including 109,211 infantrymen and cavalrymen as well as 1688 artillerymen. Further, there were 6240 wagon drivers, 1721 engineers,

1578 commissary men, members of the field commissary as well as servants and men of the king, 1528 men with the artillery train, 1374 corpsmen and soldiers in the headquarters of the three Army corps, 122 special dispatch riders and 12 engineers (Jany, Ibid., p. 85).

12. In the Second World War, the resupply requirement of the divisions was still relatively slight. Nevertheless, 200,000 men were required only for railroad traffic in the area of a single Army group, Army Group Centers: 52,000 engineers and soldiers of transportation, 86,000 civilian railroad operating personnel of the Reich Traffic Directorate Minsk as well as 50,000 men for security troops (H. Teske, Die Silbernen Spiegel, Heidelberg, 1952, p. 175). The field troops, however, which were supplied at such a gigantic effort, were exhausted and no longer received replacements. The personnel situation was so critical that the commander in chief of the Army Group, Field Marshal von Kluge, turned directly to Hitler: "The Army Group is short 200,000 men. The recent losses are so great that the reduction of combat personnel among the formations most heavily attacked is horrifying." (Letter of 14 October 1943, quoted by O. Heidkamper, Vitebsk, Heidelberg, 1954, p. 35). Since losses could hardly be replaced, the commander in chief of the Third Tank Army, Colonel-General Reinhardt, was even forced to reserve to himself the approval for counterattacks. The Armored Infantry Regiment 12 operating in the area of the Army group, for example, reported on 24 February 1944, a foxhole strength of 112 soldiers (O. Schaub, Aus der Geschichte des Panzergrenadierregiments 12 (From the History of Armored Infantry Regiment 12), Bergisch-Gladbach, 1957, p. 283).

13. "The allied miltiary personnel were superior by a ratio of at least 3 to 1 to the forces of the Viet Cong and the North Vietnam Army. During 1969-71, the ratio approximated the value of 6 to 1. However, in the case of armed forces in operations, and referring to the soldiers in combat battalions, we find the allied superiority dropping off greatly. Instead of being superior by 6 to 1 to the Viet Cong and the North Vietnamese in 1970, the superiority is 1.6. In addition, this ratio remains rather constant from 1965 to 1971 instead of likewise rising parallel to the increase in overall balance of forces. In 1972, there was even an allied inferiority of 0.8 to 1." In addition, the Americans and South Vietnamese used many of their combat forces for securing their extensive logistic installations and their lines of communications, for example in January 1968 60%. "The remaining allied forces had no noteworthy advantage over those forces with which they were engaged. The balance of forces lay here between an allied superiority of 1.1 to 1 and an allied inferiority of 0.7 to 1. (Th. Thayer in: The Lessons of Vietman, published by W. Scott and D. Frizzell, London and New York, 1977, p. 90 ff).

14. Ch. HDv 100/100, No. 2901.

15. 11,000 soldiers including 8,400 in three infantry regiments with the remaining 2,600 divided into an artillery regiment, on assault gun detachment as well as the customary division troops.

16. The effect of this phenomenon can be clearly demonstrated by the combat of the 24th American Infantry Division. On the third day of battle around the Naktong the division had 4,600 out of 14,500 soldiers, accordingly barely 1/3 of their personnel in the three infantry regiments. The Fourth North Korean Infantry Division now reduced to 7,000 men had 4,500 cut out of 7,000 soldiers, accordingly a full 2/3 of their personnel in the three infantry regiments. Therefore, they were in infantry fully equal to their two times larger enemy. Probably they were even considerably superior since, in the North Korean infantry regiments, the component of fighters was higher than in the American regiments customarily having a large "tail". The weak North Korean division found it possible to accordingly use more soldiers for infantry combat than their very much stronger opponent. This would have been meaningless under conditions in which the Americans could play their trump cards - long-range fire and motorized mobility. During night combat in the Korean mountains, on the other hand, the infantry superiority decided the battle.

17. Example: The Armored Infantry Regiment 12 of the Fourth Armored Division reported, after the supply units had been combed out a number of times, that on 24 February 1944 it had a ration strength of 1,115 soldiers but only a combat strength of 305 and even only a foxhole strength of 112 soldiers. Even within the armored infantry regiments, only a fraction of the personnel found it possible to take part in combat.

18. One typical example is described by the report of B. Fall. Das Ende der Kampfgruppe 100 (The End of Combat Team 100), Wehrwissenschaftliche Rundschau 11/1960. The report dealt with the fate of a French Infantry regiment. After having been used in Korea, it had been reorganized into a mechanized combat team and was to be used as an intervention and elite unit with reputedly high mobility and special firepower. The unit was completely destroyed after only a few extremely high-loss operations. One lightly armed Vietnamese infantry regiment had attacked them in cluttered terrain.

19. HDv 100/100, Nos. 907 and 910.

20. Almost the entire literature on the Korean War emphasizes that the great significance of infantry has again been proven. Cf. particularly, C. Rougeron, Les Enseignements de la Guerre de Coree (The Lessons of the Korean War), Paris, 1952, p. 56 ("The superiority of infantry over all other arms was affirmed from one end to the other of the Korean Campaign"). F. Wirth, Ruckblick auf den Koreakrieg (Backward Glance on the Korean War), Wehrkunde 8/53; Chester Wilmot in: Neue Zurcher Zeitung, 1953, No. 288: A. Waibel, Kriegslehren aus dem Feldzug in Korea (Military Lessons Learned

from the Korean Campaign), Allgemeine Schweizerische Militarzeitschrift, 1951, especially p. 456; F. v. Senger and Etterlin, Die militarischen Lehren des Korea-Krieges (The Military Lessons of the Korean War), Aussenpolitik, 1953, especially p. 631 ff).

21. The smallest major unit for combined arms battle was the division in the Second World War. An armored division had in 1940 one armored and one infantry brigade each with two regiments. The occasionally criticized reorganization of the divisions after the campaign in France left them with two armored infantry regiments and one armored regiment. The armored brigade of the Bundeswehr, smallest unit for combined arms battle, has two armored battalions and one armored infantry battalion. Accordingly, it is relatively much weaker in infantry than the mechanized major units of the Wehrmacht which additionally knew that very strong infantry units were behind them.

22. H. Graf von Moltke, Ausgewahlte Werke (Selected Works), published by F. v. Schmerfeld, Vol 1, Berlin, 1925, p. 330.

23. E. Middeldorf, Taktik im Russlandfeldzug (Tactics in the Russian Campaign), Darmstadt, 1956, p. 30 ff.

24. R. Howze, 35 years, in: Army, April 1966, p. 41.

25. Congress of the United States, House of Representatives, The Beard Report (April 1978), Superintendent of Documents, Washington, 1978. Retranslated from German translation.

26. In the statistical average(Gaussian bell curve), an "average intelligence" of 33% of the conscripts would be expected, but the armed forces require that 45% of their recruits demonstrate "average intelligence". "High intelligence" is to be statistically expected of 23% of the recruits whereas the requirement of the armed forces is 31%. The values for all other intelligence levels are corresponding.

27. In our armored and armored infantry divisions, about 29% of the soldiers "apply fire to the enemy", personnel replacement battalions not counted. Among those soldiers applying fire to the enemy were counted: all soldiers of the infantry platoons, all crews of combat vehicles and combat support weapons, all forward observers and the company headquarters. If the combat is carried out dismounted, the percentage decreases considerably since presumably many armored vehicles cannot be committed for battle in built up areas, forests and highlands. The 29% engaging in combat or directly supporting it are contrasted within each division with about 6,000 soldiers who exclusively are used for supply - from the company sergeant-major detachment of the combat battalions to the supply battalion of the division. A great many other soldiers, more particularly the engineer, communications and military police units, indirectly serve supply requirements.

28. F.O. Miksche computed as early as 1954 a personnel requirement for an American division amounting to 68,000 men of which 18,000 were used in the division and 50,000 to the rear of the division. (F.O. Miksche, Atomwaffen und Streitkrafte (Nuclear Weapons and Armed Forces), Bonn, no year, p. 139).

29. O. Munzel, Die Deutschen Gepanzerten Truppen bis 1945 (German Armored Forces to 1945), Herford and Bonn, 1965, p. 64.

30. Middeldorf, Ibid., p. 10.

31. U.S. Army in the Korean War, p. 524.

32. Ibid., p. 653.

33. A. Greer, the New Breed - the Story of the U.S. Marines in Korea, New York, 1952, p. 163.

34. H. Jacobsen, 1939-1945, Der Zweite Weltkrieg in Chronik und Dokumenten (The Second World War in Chronicle and Documents), 5th Ed., 1961, p. 310 ff.

35. Cf. W. Meyer-Detring, Die 137. Infanteriedivision (The 137th Infantry Division), Petzenkirchen (Austria), 1962, p. 190 ff.

36. Cf. in this regard, an after-action report of January 1943 concerning behavior of logistic troops of the Sixth Army during the Russian breakthrough for the encirclement of Stalingrad. The report provides a number of carefully analyzed examples and concludes with the judgment: "There was a lack of any will for combat or defense." (F. von Senger and Etterlin, Die 24. Panzerdivision (The 24th Armored Division), Neckargemund, 1962, p. 134 ff.)

36a. Cf. also Footnote 13.

36b. HDv 100/100, No. 2612.

37. On 1 July 1951 the Chinese had in the Korean theater 275 antiaircraft artillery guns and 600 automatic weapons. One year later, they used more than half of their antiaircraft weapons, namely 132 antiaircraft artillery guns and 708 automatic weapons for protection of the most important bridges and railroad lines. "By standards of World War II, the Red flak was weak". (Futrell, Ibid., p 210 and 437) For comparison: In February 1945, the German Air Force flak alone had 12,179 heavy as well as 19,390 medium and light weapons (one-barrel to four barrel) in operation. Added to this were many thousand guns of the antiaircraft units of the Army, the Waffen-SS, the Navy, the Navy Shipboard flak as well as numerous batteries of the Reich Labor Service (H. Koch, Flak (Antiaircraft Artillery), Bad Nauheim, 1954, p. 211 ff.).

38. D. MacArthur, Reminiscences, New York, 1964, p. 383 ff.

39. Futrell, Ibid., p. 407.

40. Ibid., p. 436.

41. Ibid, p. 413, cf. also W. Hermes, United States Army in the Korean War, Vol. 3: Truce Tent and Fighting Front, Washington, 1966, p. 192 ff.

42. F.O. Miksche, Ibid., p. 138 f. as well as similarly under the title: "Grundsatzliche Gedanken zur Gliederung von Zukunftsheeren" (Fundamental Concepts for Organizing Future Armies), in Wehrkunde 5/1956 and "Vom Kriegsbild" (The Pattern of War), Stuttgart, 1976, p. 252 ff.

43. Cf, the severe defeat of the Americans at the Ch'orgch'on in November 1950 described in U.S. Army in the Korean War, p.689 ff. (First part of the battle) and S. Marshall, The River and the Gauntlet, translated into German "Der Uberfall am Chongchon, Fauenfeld" (Switzerland). 1954 (second part of the battle), Cf. also R. Gugeler, Combat Actions in Korea, Washington, 1954, pp. 3-129.

44. Combat of the First Battalion Infantry Regiment 27 on 2 August 1950, U.S. Army in the Korean War I, p. 242.

45. Typical are the battles of the First Cavalry Division in September and October 1950, U.S. Army in the Korean War I, pp. 560-566 and 646-653.

46. A. Geer, Ibid., p. 192.

47. U.S. Army in the Korean War I, p. 718 ff.

48. Ibid., p. 720.

49. E. Sixsmith, British Generalship in the 20th Century, London, 1970.

50. C. Barklay, Lessons of the Korean Campaign, in: Brassey's Annual, London, 1954, p. 131.

51. Among others, HDv 100/100, Nos. 907, 910, 2901,2917, 3201.

52. Hdv 100/100, No. 2912.

53. According to American investigations, in the Second World War in Europe, 50% of all duels between American tanks and German tanks and tank destroyers took place at ranges under 500 m (P. Kruger, Uberlegungen zur Panzerabwehr in der Verteidigung (Considerations on Antitank Defense in the Defense), Wehrkunde 10/75 and 11/75, p. 573).

54. O. Munzel, Ibid., p. 185.

55. E. Middeldorf, Ibid., p. 157.

56. H. Scheibert, Zwischen Don and Donez (Betweeen Don and Donetz), Neckargemund, 1961, p. 138 f.

57. Example: The Fourth Armored Division operated continuously in the East. It was never, as were many other armored divisions, transferred temporarily for replenishment to the West. If the division was used for defense, often only the armored infantry regiments were committed whereas the tank regiment remained in reserve. Nevertheless, the Armored Infantry Regiment 12 in 1438 days of the Russian campaign had 1088 (76%) operating days with enemy contact, however, 350 (24%) days at rest or operating days without enemy contact (usually marches in the hinterland) (Schaub, Ibid., Annex 12).

58. Numbers according to "The Military Balance", published by the International Institute for Strategic Studies, London, 1977-78 - in part supplemented.

59. The White Book 1975-76 "Zur Sicherheit der Bundesrepublik Deutschland" (The Safety of the Federal Republic of Germany) estimates for Central Europe 88 Soviet as well as, perhaps somewhat flatteringly, 27 NATO divisions.

60. Jacobsen, Ibid., p. 446 f.

61. A Goutard, La Guerre des Occasions Perdues (The War of Lost Opportunities), Paris, 1956, p. 78 ff.

62. 3.05 million German soldiers with 3580 tanks (including numerous Panzer I and II with MG or 2 cm guns) and 2740 aircraft against 4.7 million Russians with 10,000 to 14,000 tanks and 5,000 aircraft (A. Hillgruber and H. Jacobsen, Die Sowjetische Geschichte des Grossen Vaterlandischen Krieges (The Soviet History of the Great Fatherland War), Frankfurt, 1961, p. 31).

63. Cf. more particularly, for a quality comparison of German and English tanks, the detailed investigations of Liddell Hard in: The Tanks - History of the Royal Tank Corps, New York, 1958, pp. 83, 93, 102, 154 f.

64. An opposite view is presented by E. Middeldorf (Handbuch der Taktik (Manual of Tactics), Berlin and Frankfurt, 1957, II p. 290): "Since the main element of defense is firepower and that of attack is movement, utilization (of nuclear warheads) makes defense by far the strongest mode of combat and, more particularly, emphasizes the value of defense ... Wherever possible ... the command should therefore make use of a continuous defense and only in cases where it is necessary pass over to attack." Similarly, p. 307: "Nuclear weapons accordingly do not exclude the basic tactical advantages of defense but, rather, reinforce them." A similar argumentation is frequently encountered today. It overlooks the time factor which plays a decisive role when using nuclear weapons. Nuclear weapons can intervene in combat of the combat force only after warning of friendly troops and air force. Time is required for this.

Thus, there is unavoidably a considerable time delay between target reconnaissance and weapons employment - whereby the problem of time delay owing to the release process has not yet been addressed. Static targets, above all a dug-in defender can possibly be struck in spite of the described time delay. A moving attacker, however, is not.

Accordingly, the question must remain open whether nuclear weapons favor the attacker or the defender. The statement is then questionable that the NATO divisions which could not carry out their defense mission conventionally would be able to do so in a nuclear war (carried out by both sides). See among others, O. Heilbrunn, Conventional Warfare in the Nuclear Age, London, 1965, p. 63 ff.

65. Cf. for an alternate view, Liddel Hart, Deterrent or Defense, London 1960, p. 89 ff. whose examples, however, support the view presented here. Cf. H. Poeppel, Krafte fur die Verteidigung (Forces for Defense), Wehrkunde 9/78, p. 435.

66. Example: On 15 September 1943, there were in Finland 350,000 Finnish soldiers against only 180,000 Russians, 200,000 Germans against only 90,000 Russians (W. Erfurth, Der finnishche Krieg 1941-1944 (The Finnish War 1941-1944), Wiesbaden, 1950 p. 153).

67. A special committee of the American Senate stated in 1979: "The lack of ammunition and spare parts is critical in Europe. In the event of a war, the ammunition would not be gone in months or weeks but in days." (Die Welt, 25 May 1979). The ammunition situation of the Bundeswehr was the subject of discussions in the Defense Committee of the German Bundestag in October 1979.

68. Cf. H. Delbruck, Geschichte der Kriegskunst (History of the Art of War), III, Berlin, 1928, p. 430 ff.

69. Delbruck, Ibid., 459 ff.

70. H. Hildebrandt, Gesprach mit Adelbert Weinstein (Discussion with Adelbert Weinstein): "With much technology towards the military future", Frankfurter Allgemeine Zeitung of 22 May 1976.

71. Our preference for advanced technology occasionally brings forth marvelous blossoms. This can be shown by some curious examples: Every tank soldier knows how difficult it is at night to find a specific vehicle, perhaps that of the company commander, out of a group of tanks. In addition, almost every tank soldier has experienced, at night and marching in column, that a tank could no longer identify the vehicle travelling in front and, for this reason, lost its way, together with all the tanks following him, The problem has also appeared elsewhere and has been solved there: The Navy travels in wartime with blacked-out stern light. Even the Russians have done it: At the rear of the turret is a small lamp which shows that a tank is travelling there and which tank it is (Soldak und Technik, 11/1978, p. 5910). Even nature has had some ideas: Rabbits and deer and other animals have a white behind so that they can follow each other at night.

Only the ingenuity of our tank designers has failed here - there is only the paltry convoy light which deserves no mention. Is this because the problem, a daily one for the field force, is, technically uninteresting for tank designers? Is this because it justifies neither laser technology nor a computer? And, for this reason, does not deserve the attention of a dynamic, progressive, modern tank designer receptive to the technology of the future? The example may be unimportant and, for this reason, appear to be exaggerated. Then we can wonder why every German automobile and many Russian combat vehicles but not the periscope of our tank drivers have a windshield wiper. Any why do the optical systems of Russian tanks and even the rear windshields of many German automobiles have a heating device but not the optics of the aiming systems of our tanks? Do they actually never become fogged? Is it incorrect to ask why our tanks are outstandingly equipped with all products of costly advanced technology whereas they lack the important capabilitiies of conventional and inexpensive technology? Admitted: Windshield wipers and heatable optics are not our most urgent wish. And since we will predominantly defend, even the lack of the exceedingly simple mine clearance devices of the Russian tank may be tolerable. But is there an answer to the question why those of our tanks which do not have the good fortune of finding a railroad embankment or a low hill for a partly covered position must courageously face the enemy with full size on the flat ground? Every T72 can, within a very short time, provide its own partially covered position. It then offers only its turret as a difficult-to-detect target. Why can we not do this? It is actually of so little importance whether we face the enemy with our complete profile or whether we await him in a self-prepared partially covered position? An Italian tank specialist commented on the mine-clearance devices and dozer blades of the T72 with the astonished statement that the latter involve "simple, almost obvious, inventions about which no one had yet thought today at least in the West". (E. P,. Die Neue Generation sowjetischer Kamfpanzer (The New Generation of Soviet Main Battletanks), Soldat und Technik, 11/78, p. 590.) It is accordingly certainly typical that the Bundeswehr still provides their soldier with a helmet which threatens to fall on their nose whenever they lie prone.

72. F.Uhle-Wettler, Computerstudien und militarische Erfahrung (Computer Studies and Military Experience), Soldat und Technik 4/75 as well as 9/75.

73. H. Poeppel, Krafte fur die Verteidigung (Forces for Defense), Europaische Wehrkunde 9/78, p. 433 ff.

74. HDv 100/100, Nos. 907, 910, 2901, 2917.

75. Instruction for Training Armored Infantry Forces F1: The Armored Infantry Battalion No. 102: "The armored infantry battalion can be used in almost any terrain." The same as No. 350.

76. "The U.S. Army is infatuated with the 'plains of Germany', and this has led to the development of equipment, weapons and tactics designed for a Patton-style war of maneuver with combat being conducted at a range of several thousand meters. The blind eye turned to urban areas by the American military strategy community can reach epic proportions. A typical example is a recent theater battle computer model designed to study European defense, issued in 1974. Out of a total of 1265 pages of scenarios, descriptions, equations and commentary, only four sentences are devoted to urban areas." (P. Bracken, Urban Sprawl and NATO Defense, Hudson Institute, New York, 1977, p.257).

77. "Defense must search an open plain and attack must look for broken terrain ... supporting the wing (of a defense position) on terrain only, generally covered and difficult, no longer corresponds to the conditions because this is precisely what will be sought by the attacker in order to avoid a superior fire effect" (H. Graf Moltke, Ausgewahlte Werke (Selected Works), published by J.v. Schmerfeld, Berlin, 1925, Vol. 1, p. 330).

78. P. Bracken, Ibid., p. 259.

79. H. Hildebrandt, Ibid.

80. Ph. Karber, The Soviet Tank Debate, German Die Taktische Revolution in der Sowjetischen Militardoktrin, Europaische Wehrkunde 6 and 7/77, as well as its critique L. von zur Gathen, Anderungen in der Militardoktrin der Sowjetunion? (Are There Changes in the Military Doctrine on the Soviet Union?), Europaische Wehrkunde 9/78.

80a R. Franklin in: The Lessons of Vietnam, Ibid., p. 175.

81. The Himmerod Memorandum, in: Military geschichtliche Mitteilungen, Militargeschichtliches Forschuivgsamt, I 1977.p. 172.

82. Ibid.

83. H. Poeppel, Ibid.

84. H. Poeppel, Ibid., p. 434.

85. Cf. H. Kruger, Uberlegungen zur Panzerabwehr in der Verteidigung (Considerations on Antitank Defense in Defense), Wehrkunde 10/75 and 11/75.

86. As example: "The blind eye turned to urban areas by the American military strategy community can reach epic proportions. A typical example is a recent theater battle computer model designed to study European defense, issued in 1974. Out of a total of 1265 pages of descriptions, scenarios, equations and commentary, only four sentences are devoted to urban areas" (P. Bracken, Ibid., p. 258).

87. Instruction for Training the Armored Forces Fl: The tank battalion, No. 337, similar to Instruction for Training the Armored Infantry Force Fl: The armored infantry battalion, No. 351.

88. "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 built-up 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.." R. Franklin in: The Lessons of Vietnam, Ibid., p. 175.

89. Cf. F. Doepner, Infanterie und Panzer (Infantry and Tanks), Wehrkunde 3/1961, p. 126 as well as P. Kruger, Uberlegungen zur Panzerabwehr in der Verteidigung (Considerations on Antitank Defense in Defense), Wehrkunde 10 and 11/75.

90. Quoted by F. Doepner, Uber die Auswertung von Kriegserfahrungen in der infanteristischen Verteidigung (On the Evaluation of Wartime Experience in Infantry Defence), Wehrkunde 6/61, p. 278.

91. Hildebrandt, Ibid.

92. H. Guderian, Panzer Marsch (Tanks Forward March), Munich 1957, p. 111.

93. Ibid., p. 128.

94. The following illustrations according to the Instruction for Training the Armored Force F1 - Das Panzerbataillon (The Armored Batallion)No. 1321 ff.

95. Hdv 100/100, No. 425.

96. HDv 100/100, Ibid.

97. C. Duffy, Friedrich der Grosse und Seine Armee (Frederick the Great and His Army), German, Stuttgart, 1978, p. 159.

98. B. Liddell Hart, The Tanks, I, p. 162 ff.

99. Command Regulation "Das moderne allgemeine Gefecht" (The Modern General Combat) (1952), quoted by Kissel, Das Problem Infanterie (The Infantry Problem), Wehrkunde 1954, p. 186. Cf. Middeldorf, Taktik im Russlandfeldzug (Tactics in the Russian Campaign), p. 10 f. It is interesting how the German evaluation of the armored units is judged in the Soviet Union (Military Academy M.W. Frunse, Chair for History of Military Science: Die Entwicklung der Taktik der Sowjetarmee im Grossen Vaterlandischen Krieg (The Development of Tactics of the Soviet Army in the Great Fatherland War), East Berlin, 1961, p. 101): "Named among the other deficiencies of German tactics is the overemphasis of one arm at the expense of another. Always attempting to attack rapidly and with surprise, the German High Command placed all its hopes on mobile forces, accordingly on tanks and motorized units... Naturally, these units played a great role in the battles of the Second World War. In the Fascist Army, these forces,

(The Burden on the Soldier Owing to Clothing and Equipment), in: Wehrdienst und Gesundheit XIV (1965), p. 170 ff. ; Delbruck, Geschichte der Kriegskunst 2 (History of the Art of War 2), p. 476 f.

109. Already in 1962, farmers in the FRG had 999,218 tractors. The forest vehicles are in addition.

110. The Himmerod Memorandum even stated that "experience shows that subordination of more than two divisions under one corps has an adverse effect on training in peacetime and on command and control in war."

111. The infantry squad of the U.S. Marine Corps had a strength of 1/13 in 1965. The squad leader "commands and he uses his weapons only when the situation becomes critical" (FMFM 6-5, The Marine Rifle Squad, Washington, no year, p. 5) The 13th soldier operated a grenade launcher and was directly responsible to the squad leader. The remaining 12 soldiers were organized in three fire teams with three enlisted men and a fire team leader each. The team leader acted primarily as a tactical commander. "Only in addition to his primary duties as a commander and not to their detriment, does he act as a rifleman" (Ibid.) - Quotations retranslated from the German.

112. The dismounted strength of a MICV-battalion equipped with MILAN ATGW is 265 soldiers. A MotRifle Division of Pact countries can use about 1860, a German tank division can use slightly more than 1000 soldiers and a German armored infantry division about 1300 soldiers in dismounted combat. When comparing the German and the Russian divisions, it must be noted that the German divisions have much more personnel.

113. The Memoirs of Captain Liddell Hart, London 1965, p. 222.

114. Cf. M. Janowitz, Cohesion and Disintegration in the German Wehrmacht in World War II, Public Opinion Quarterly XII (1948), p. 280 ff., and R. Gabriel and P. Savage, Crisis in Command, New York 1978, p. 40 ff. and p. 92 ff.

115. Example: In 1978, one of our highest politicians wanted to be given an insight into the personnel and its composition of a typical company, especially percentage of officers, career NCOs, short term service NCOs, conscripts, etc. In preparation for this, on an arbitrary day an armored brigade determined the difference betweeen paper strength and soldiers actually available for training for all its tank companies. Normally and on paper, the companies would have had 89 men. However, the investigation resulted in that on the given day in all the companies more than 30 soldiers had been absent for various reasons. In the case of the company presented as typical to the politician, there were absent: 4 soldiers driving school, 3 soldiers on guard duty, 3 soldiers light duty, 2 soldiers sick call, 2 soldiers on leave, 2 NCO course, 2 soldiers duty NCO/duty private, 2 NCOs instructors at NCO candidate course, 2 NCOs leave, and finally 1 person each course for junior officers, participant in NCO pretraining, participant senior Sergeant's course,

however, were given such significance that the employment of other arms above all the artillery, during the entire war was underestimated and neglected."

100. F. Doepner, Infanterie und Panzer (Infantry and Tanks), Wehrkunde 3/1961, more particularly p. 129, footnote 10.

101. Toward the end of the Second World War the Russian Army massed up to 342 guns and mortars per kilometer of attack front, e.g. in the sector of the 79th Infantry Corps and the 32nd Guard Infantry Corps in connection with the "Berlin Operation" in 1945 (Military Academy M.W. Frunse, Ibid., pp. 144 and 196). Even in the plains of Mongolia and against very weak Japanese forces, they used in the penetration sector 200-240 guns and mortars per kilometer and broke through almost without difficulty (L. Dzirkals, Lightning War in Manchuria - Soviet Military Analysis of the 1945 Far East Campaign, Rand Corportation No. 5589, Santa Monica, U.S.A. 1976, p. 57.

102. In the Russian army, the artillery has always played a very significant and probably a more significant role than in the Prussian-German Army. Stalin characterized it as the "Lord of battles" and already in the 18th Century, the Russian recruits were given the oath not at a banner but on the carriage of a gun (C. Duffy, Ibid., p. 281).

103. HDv 100/100, No. 2718.

104. HDv 100/100, No. 1032.

105. HDv 100/100, No. 2703.

106. The effect of the principle described can be illustrated clearly on the basis of the defense of the 24th American Infantry Division during the battle around the Naktong area described in the first chapter. The division carried out the combat with three infantry regiments (including an attached South Korean regiment) as well as one in reserve in a 30 kilometer wide sector. The attacking enemy was only half as strong as the American division. Its wide dispersion, however, gave it the possibility of infiltrating everywhere and passing thereby onto the Americans the role of the attacker. The far-superior Americans were however, not strong enough for this role. The description of the American official history clearly shows that the attacking North Korean division infiltrated almost everywhere without contact in order to prepare for defense in the depth of the American defense. Correspondingly, an American unit was hardly ever attacked and the Americans hardly ever had to defend themselves. The units of the defending 24th American Infantry Division had to be used almost exclusively for attack.

107. François, La 6^{e} Colonne (The Sixth Column), Paris, 1979, p. 48 ff.

108. W. Frank, Mobility for Battalions, Marine Corps Gazette 7/1958, p. 11. W. Fischer, Die Belastung des Soldaten durch Bekleidung und Ausrustung