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CIA SOV 87-10044D

The Cutting Edge: Soviet Mechanized Infantry in Combined-Arms Operations

A Research Paper

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SOV 87-10044D
October 1987
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The Cutting Edge: Soviet Mechanized Infantry in Combined-Arms Operations

Summary

Information available as of 1 June 1987 was used in this report.

The Soviets consider mechanized infantry essential for sustained success on the nuclear or conventional battlefield. Mechanized infantry would be critical not only for uniquely infantry roles such as close assault, but also for operations in urban areas and rough terrain and for exploiting breakthroughs by defeating NATO reserves and preventing NATO from reestablishing a coherent defense. [redacted] combined-arms formations based on mechanized infantry and tanks supported by artillery have replaced predominantly tank formations as the main component of Soviet land combat power.

These changes are driven by the Soviet belief that improvements in NATO's defensive capability, especially the increased stability of its tactical defensive zone, threaten the ability of tank formations to operate independently. The Soviets attribute NATO's enhanced defensive capability to technological advances such as antitank guided missiles and to improvements in force structure.

The growing role assigned to Soviet mechanized infantry has been made possible by improvements in force quality and organization, including:

- A substantial increase in the combat power of a motorized rifle division (MRD) through the fielding of new and better infantry vehicles and more artillery, antiaircraft, and antitank systems. [redacted] the Soviets now consider an MRD at least as powerful as a tank division.

- A significant increase in the amount of motorized infantry within tank divisions. Since the mid-1970s, motorized rifle battalions have been added to tank regiments. Along with additional artillery, this has transformed tank regiments into more capable combined-arms units and has substantially increased the total number of motorized infantry units in the Soviet forces.

- The replacement of wheeled infantry vehicles with more powerful and better protected tracked infantry vehicles. The Soviets have apparently decided to convert many MRDs, especially in the groups of forces in Central Europe and the western military districts of the USSR, to an all-tracked structure, discarding the traditional mix of wheeled and tracked infantry vehicles. This process has just begun. Because of cost constraints, we do not expect all Soviet forces to adopt the all-tracked structure.

- The experimental formation of new organizations that use even more mechanized infantry in combined-arms operations. Two new army corps, with an unprecedented combination of infantry and tanks at battalion level, have been developed over the last four years. Up to three additional army corps of this type may be formed by the end of the decade

A number of constraints, however, serve to limit the capability of Soviet mechanized infantry to fulfill demanding tasks assigned to it:

- Longstanding problems with command and control will limit the effectiveness of mechanized infantry forces. [redacted] senior Soviet officers indicate serious concern about the capability of combat officers (battalion to division) to master the complexities of directing combined-arms operations. The mixing of mechanized infantry and tanks at battalion level in the new army corps probably is an attempt to simplify command and control of combined-arms operations.

- The basic element of Soviet mechanized infantry—the squad—has declined in size from 14 to 10 men over the last three decades and can now deploy only seven men for dismounted assaults. The need to provide a crew for the infantry vehicle and the increase in the number of fire-support weapons have been among the factors responsible for the shrinkage in the number of riflemen available for dismounted assaults. [redacted] the decrease in the size of mechanized infantry squads comes at a time when the dismounted assault role of infantry has become increasingly important. The reduction will make sustained operations of this type more difficult.

- Deficiencies in specialized and realistic training will make it difficult for infantry to implement more flexible tactics and to operate in urban and rough terrain. Training problems will also hinder battalion-level combined-arms integration. New tactics and organizations developed since the mid-1970s will place additional burdens on already overworked and undertrained junior officers and senior noncommissioned officers.

- Shortcomings in the number of infantry vehicles would limit the rapid concentration of divisions to provide capable reinforcements for operations in Central Europe and to conduct operations in secondary theaters. Production of modern infantry vehicles has been sufficient to almost completely equip Soviet MRDs in Central Europe and the western USSR with their authorized complement. But nearly half of the remaining MRDs lack their full complement of infantry vehicles and probably would make up the shortfall with civilian trucks. We project that infantry vehicle production over the next 10 years will be sufficient to maintain already modernized forces and to expand slowly the number of fully equipped MRDs in the rest of the USSR

Despite these shortfalls, in a conventional war in Europe, NATO soldiers would be faced with large numbers of Soviet mechanized infantry equipped with well-protected, heavily armed, and maneuverable infantry vehicles. The firepower and protection margins of Pact infantry vehicles will put most current NATO infantry vehicles at a significant disadvantag

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Introduction

Since the late 1960s the Soviets have become increasingly concerned with conventional war fighting. The Soviets no longer feel confident that war in Central Europe against NATO would begin with, or quickly escalate to use of, nuclear weapons. They now believe that a conventional conflict might be protracted or even terminated without ever going nuclear. This has prompted the Soviets to devote greater attention to conventional operations and the capability to conduct such operations on the European battlefield.

This doctrinal reassessment was influenced by two other developments that led the Soviets to attach greater importance to mechanized infantry on the modern battlefield. First, and most important, was the Soviet perception of the increased capability of NATO defenses, given technological advances such as antitank guided missiles and improvements in NATO force structure. These have caused the Soviets to reinforce the role of infantry in combined-arms operations.

Second were Soviet evaluations of combat during the 1973 Arab-Israeli war.

The Soviets call their infantry "motorized rifle" units. In fact, their firstline units meet the Soviet definition of *mechanized infantry*, that is, combined-arms units composed of infantry equipped with armored infantry vehicles, tanks, and artillery. The lack of infantry vehicles in many of the Soviets' rear-echelon divisions, however, would compel them to employ truck-mounted infantry units or *motorized infantry*. This type of unit is transported in trucks or lightly armored vehicles, generally without tanks. A modern example of a motorized infantry unit is the British Territorial Army brigade, which is equipped with the Saxon armored personnel carrier (APC). There are also *light infantry* units, which do not have organic motor transport. An example is the US 82nd Airborne Division. The Soviets do not field any light infantry units.

Soviet Pessimism Concerning the Conventional Battlefield

Soviet military planners have become increasingly concerned with NATO's growing conventional defensive capability. They believe that NATO exploitation of new military technology and improvements in its force structure are increasingly calling into question their ability to dominate the conventional battlefield. The Soviets consider the vastly improved hit-and-kill probabilites of such modern weapons as the Hellfire antitank guided missile (ATGM) and Copperhead precision guided munition to represent a qualitatively new threat to their forces. [redacted] have stated that these new weapons would lead to a vast increase in destruction on the modern battlefield. [redacted] point to the serious Syrian losses in just two days of limited fighting in Lebanon in 1983 as an example.

The almost complete mechanization of NATO ground forces in Central Europe is a major concern of Soviet planners. NATO armored formations now possess greatly increased firepower and could quickly react to Soviet thrusts, rapidly altering force ratios on the Soviets' main axis, thereby disrupting their operational planning. [redacted] states

that it will be exceptionally difficult to prevent the concentration of NATO reserves opposite Soviet attack axes because of the mechanization of NATO forces

Warsaw Pact analyses of modern NATO defenses exhibit a particular concern about the greatly increased threat to Pact tank forces. In a 1978 unclassified article in *Voennyi Vestnik (Military Herald)*, Soviet Major General Biryukov (a professor at the Frunze Combined-Arms Academy) projected that a Soviet tank battalion independently attacking a NATO mechanized infantry company would suffer casualties of at least 50 percent without a guarantee of success

There is ample precedent for such projections and concerns. As a result of their study of World War II combat operations, for example, the Soviets found that in an attack, on average, they lost 30 to 40 percent of tanks committed. The bulk of these losses (88 percent) were the direct result of German antitank fire. Of course, modern NATO antitank weapons are not only more numerous but more effective as well. Although we do not know the current Soviet qualitative assessment of NATO's overall antitank capability, the comparison in the table of average NATO antitank weapons densities to World War II German densities shows the destructive potential of NATO defenses. Clearly, the number of tanks and antitank weapons in a kilometer (km) of front has increased significantly. The increased capability of these systems as well provides a general appreciation of the kind of problem the Soviets foresee

Weapons Densities in Select Battalions (per kilometer of front)

	Tanks	Antitank Weapons	Machineguns
1944 German battalion	5 to 7	8 to 10	12 to 15
NATO battalion	12 to 17 [a]	30 to 45 heavy	50 to 75 [b]

[a] Excludes 50 to 60 APCs or infantry fighting vehicles (IFVs).
[b] Excludes 50 light machineguns.

Soviet Solutions

General Biryukov recommended that infantry, supported by tanks and artillery, be used to clear away NATO antitank defenses before tank units were committed. From our analysis of C

an examination of changes made in their force structure and exercises, we believe they have adopted precisely that solution. In the last 10 years, Soviet fire-support weapons have improved and become much more numerous. Artillery (including self-propelled pieces) at division level and below has been increased in both numbers and in weight. Soviet army- and front-level [1] artillery has been expanded and strengthened with the addition of such new systems as the BM-27 multiple rocket launcher. The Soviets have also developed innovative concepts such as the reconnaissance fire complex—designed to provide more timely and accurate support—to exploit the increase in available fire-support weapons. There has been a similar growth in the fire support provided by Soviet fixed- and rotary-wing aircraf

In addition to increasing the numbers and quality of offensive weapons, the Soviets are also taking defensive steps, including employing countermeasures against the most important NATO antiarmor weapons—the TOW and Hellfire ATGMs and the Copperhead guided projectile

Mechanized Infantry Missions

The Soviets consider infantry crucial to three specific types of assault activity: breakthrough of NATO tactical defenses, assaults on urban areas, and assaults in rough terrai

[1] A front is a joint-forces command roughly equivalent to a NATO army group and its associated tactical air forc

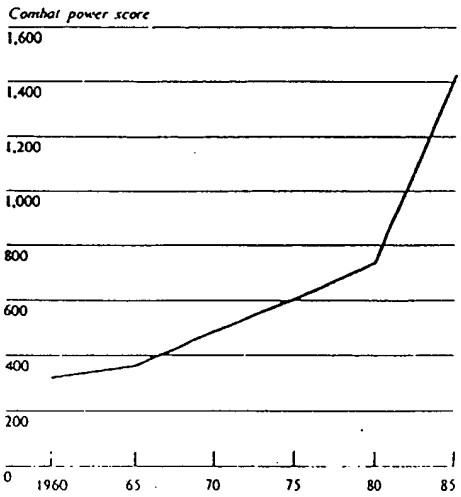
Assaulting Prepared NATO Defenses

Soviet writings indicate that, using traditional methods of attack dominated by tanks, the Soviets no longer expect to break through NATO defenses without paying an exorbitant price. Previously, they planned to exploit deficiencies in NATO defenses to outflank and bypass strongpoints and to achieve high daily rates of advance. By the mid-1970s, Soviet [redacted] indicated that not only were the gaps closed, but it would also be impossible to pierce NATO defenses unless a Soviet front was considerably reinforced. Recent Soviet [redacted] reflect the same pessimism about tank-led [redacted]ough attempts. References to quick breakthroughs have been replaced in Pact[redacted]by such terms as "agonized gnawing" through NATO defense.

The Soviets have initiated a number of measures intended to restore high offensive tempo. Analysis of [redacted] indicates that they will assign mechanized infantry rather than tanks to lead breakthrough operations. Soviet [redacted] specifically advise against the use of tank divisions ... first-echelon assaults by fronts. Formerly, the Soviets believed that the weakness of NATO defenses made the use of tank divisions in the first echelon expedient, leading to a rapid breakthrough. They evidently altered their planning because of both the vulnerabilities of tank forces and the growth of the combat power of infantry units (see figure 1). Now tank divisions are to be withheld for exploiting breakthroughs created by the infantry.

In some situations, however, the Soviets probably still would employ tank divisions as first-echelon assault force [redacted] in conditions where the enemy defense is weak or hastily prepared, the weight, speed, and shock of a massed tank attack could still quickly pierce the defenses. Losses might be heavy, but not crippling. This may explain the continued presence of large numbers of tank divisions (11 of 19) in the Group of Soviet Forces in Germany (GSFG). If used in first-echelon assaults, many of these would probably be committed against sectors the Soviets consider weak. For example, the 3rd Shock Army, composed only of tank divisions, would probably operate against the I British Corps, considered by the Soviets among the weakest of the major NATO field forces.

Figure 1
Soviet Perception of Growth in Combat Power of Motorized Rifle Division, 1960-85



Note: A representative GSFG MRD was used in calculating these scores. It was composed of one BMP regiment and two BTR regiments. Each equipment category was scored separately and then added to obtain total strength for the division.

The development of infantry vehicles[1] and their integration into the combined-arms force have presented the Soviets with novel tactical problems centered on two related but still unresolved concerns: how infantry vehicles and tanks would be coordinated in a combined assault and at what point infantry should dismount from their infantry vehicles and continue the assault on foot.

According to unclassified writings from the late 1960s to the early 1970s, the Soviets developed solutions that had infantry vehicles operating either alone or

[1] The term infantry vehicle is used to include both tracked IFVs and wheeled APCs. The Soviets often use these terms interchangeably.

with tanks in the assault. The onboard infantry would deliver fire from inside the vehicle and would not conduct dismounted assaults. The writings also indicated that the weight of the combined infantry and armor attack and the heavy volume of fire would overwhelm enemy defense

Two events caused the Soviets to reevaluate these tactical concepts. One was their growing realization that NATO development and fielding of ATGMs presented a qualitatively new threat to armored attacks. The other was the lesson they learned from the 1973 Arab-Israeli war. The Soviets were shaken by the sound defeat suffered by Syrian forces, which had used Soviet tactics and equipment. Syrian mechanized infantry remained mounted during assaults on Israeli positions in the Golan Heights and suffered very heavy casualties from Israeli tank and antitank fire

Since then the Soviets have been attempting to develop satisfactory concepts for governing the coordination of fire and maneuver of infantry and tank forces. Their current practice is to protect the infantry vehicles from ATGM fire by dismounting the infantry at a safe distance—approximately 800 meters—from defensive fire. Sovi[redacted]ndicate that the combined automatic fire fro... the infantrymen and the infantry vehicles would suppress enemy antitank fire, allowing the tanks that follow behind to overrun the enemy positic

The Soviets recognize that even this solution suffers from serious faults. Limiting the tanks to the speed of infantry advancing on foot presents the defender with slow-moving targets; alternatively, allowing the tanks to forge ahead of the infantry prematurely would disrupt the mutual supporting fire of the tanks and infantry and would leave the tanks vulnerable to antitank weapon

Sovi[redacted]also recognize that dismounted infantry once within 800 meters of the enemy would be extremely vulnerable to small-arms fire. Despite the problems inherent in a dismounted infantry assault, however, writings on the subject by Colonel General Merimskii, Chief of the Ground Forces' Combat Training Directorate, continue to assert that mounted attacks should be executed only when enemy defenses are weak or in a meeting engagement. In an article in *Voennyi Vestnik (Military Herald)* from the late 1970s, Merimskii corrected officers who advocated mounted attacks, declaring such attacks appropriate only for special conditions. The latest available writings continue the emphasis on dismounted assaults.

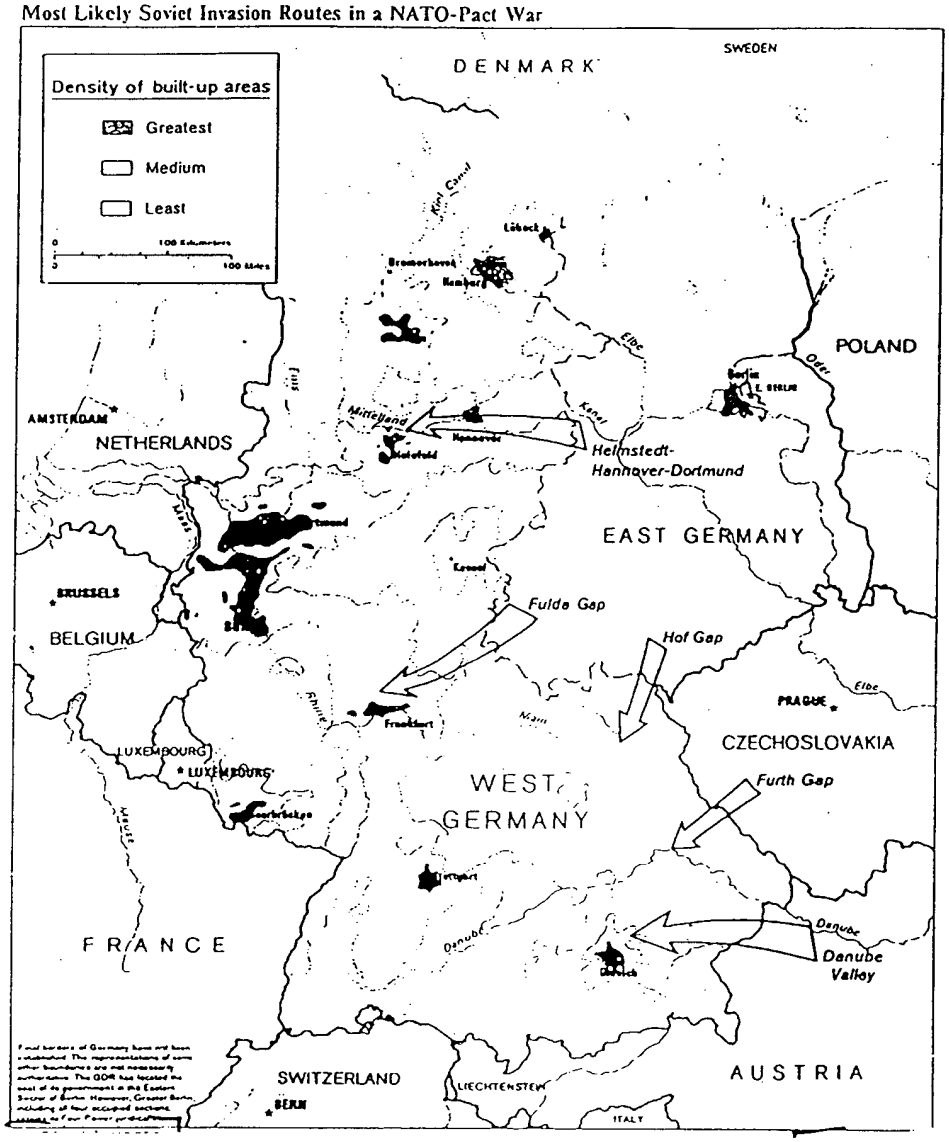
Assaulting Urban Defenses

Assault on urban areas is the second specific assault activity distinguished by the Soviets. They typically classify medium to large cities as urban terrain, but it appears that they are expanding their definition to include smaller built-up area

Recent Sovi[redacted]state that it would be almost impossible to bypass or blockade every city encountered during an advance. Previously, Soviet doctrine called for the bypass of urban centers in the interests of maintaining high rates of an advance. The Soviets recognized that urban centers could rapidly be turned into defensive strongpoints that would be difficult to storm. A city could be conquered in a short time only if attacking forces were able to drive into the city before the defenders had a chance to prepare defensive positions. In describing modern conventional operations in the European theater, a recent[redacted] Soviet milita[redacted]postulates the large urban areas where street fighting could occur lie some 40 to 60 km apart along anticipated invasion routes. Nearly all of these routes are in West Germany (see figure 2

The Soviets recognize that infantry is the only force that can successfully assault urban objectives. Since World War II, Soviet armor officers have consistently pointed out[redacted]that tank forces are ill suited for city fighting. As indicated[redacted]the Soviets believe that the commitment of large tank units to the seizure of cities, as was done in Berlin and Vienna in 1945, would result in a low offensive tempo and heavy tank losses. For example, during the Soviet attack on Berlin, one Soviet tank army lost more than 1,300 tanks and assault

Figure 2
Most Likely Soviet Invasion Routes in a NATO-Pact War



The Last Hundred Meters

Despite dramatic changes in military technology since World War II, the close-assault role of infantry has remained essentially unchanged. The following quotation illustrates this point. It was written by the French commanding officer of the 2nd battalion, 8th Moroccan Tirailleurs, who was killed in action in May 1944 during the Monte Cassino battles:

> As far as infantry is concerned, I am more than ever convinced that *the standard infantry action consists in a body of attackers seeking hand-to-hand combat.* Bear in mind that all the advances in armament over the centuries have only aimed at one thing: to fire from as far away as possible to avoid this hand-to-hand combat which men fear. The job of infantry is to break through enemy lines; to do that they must get in among those lines. In an attack, no matter how powerful the artillery and the heavy weapons, there comes the moment when the infantryman gets close to the enemy lines, all support ceases, and he must mount the charge that is his last argument, his sole raison d'etre. Such is the infantryman's war . . . [and] the object of his training should be to prepare him for what one might call 'the battle of the last hundred meters'

guns over a two-week period [redacted] elements of motorized rifle divisions (MRDs) would probably be detailed to destroy resistance in urban areas that could not be bypassed or isolated. Tank divisions would be employed only if the Soviets felt NATO defenses were unprepared and could be rapidly overwhelmed.

Tactically, Soviet doctrine recognizes that the nature of urban terrain would necessitate the use of independently operating units. Such conditions would prevent the maneuver of large units and encumber command and control [redacted] urban objectives would first be divided into a number of smaller sectors to split the defender, with each sector destroyed in turn. The basic Soviet combat element for these operations would be a dismounted mechanized infantry battalion. The battalion would be reinforced with mortars and some artillery and would have combat engineers assigned for demolition and flame work. Tanks and infantry vehicles would be used only for fire suppor

Although Soviet military writing devotes considerable attention to urban assaults, there is little evidence to indicate that Soviet troops are trained for such operation [redacted] indicate that there are only two to four active urban warfare training centers for Soviet troops stationed in Eastern Europe and the western Soviet Union. In the Non-Soviet Warsaw Pact (NSWP), however, Polish infantry and East German border guard units receive much more specialized training for urban operations. The Soviets may believe that the limited training time available to their two-year conscripts compels concentration on a limited number of skills, with the expectation that these skills can be adapted to different situations. It is also possible in some instances that Polish and East German units might be assigned to assault and occupy bypassed urban area

Assaulting in Rough Terrain

Attacking in rough terrain is the third specific Soviet assault category. This type of assault has always been an important facet of Soviet doctrine and would be necessary in operations against NATO. The Soviets' occupation of Afghanistan has served to heighten their interest in such operations.

The Soviets recognize that rough terrain degrades the effectiveness of tank units. Soviet classified writings and fielding patterns indicate that infantry would bear the bulk of the operational burden in such areas. For example, there are no tank divisions present in the mountainous Transcaucasus Military District (MD), and the MRDs fielded there have much smaller tank

[1] The intensity of urban combat is reflected in the fact that the tank army started with 667 tanks and assault guns, and essentially lost this initial inventory, had it replaced, and then lost it again. Only the close location of major tank repair units allowed the Soviets to replace these losses.

complements than do Soviet MRDs in the Western Theater of Military Operations (TMO). Tactically, the Soviets expect that the terrain would direct the flow of battle into separate but coordinated actions by independent task forces structured around infantry battalions. The main attack would advance along valley floors using small flanking detachments or tactical air assault forces to seize ridge lines and passes. Success would hinge on rapidly outflanking enemy positions and maintaining high advance rates, thereby preventing the enemy from reestablishing a coordinated defens

Organization and Structure

The MRD is the basic Soviet infantry formation. It consists of three infantry regiments and one tank regiment plus various combat support and service support elements. Analyzing the MRD by applying combat potential scores developed by Soviet military planners shows how it has evolved into a well-balanced combined-arms formation (see figure 3). This has been achieved, for the most part, through increases in antitank weapons and infantry vehicles, giving the Soviet commander a more flexible organizatic

The combat power that Soviet planners assign to MRDs has grown substantially. Reflecting the upgraded role assigned to infantry forces since the late 1960s, the Soviets have considered an MRD to contain more combat power than a tank division (see figure 4). This is the result of the introduction of large numbers of infantry vehicles, ATGMs, and improved surface-to-air missiles (see figure 5). By the 1980s, modernization and reorganization of MRDs and tank divisions had all but eliminated the difference in combat pow

The addition of mechanized infantry and fire-support weapons into Soviet tank divisions has transformed them into better balanced combined-arms units, however. Since the mid-1970s, motorized rifle battalions have been added to tank regiments, significantly expanding overall mechanized infantry forces. More artillery has also been added to tank divisions and regiments. These organizational changes have addressed many of the defects found by the Soviets in their tank division

Equipment modernization and reorganization of tank units has essentially transformed motorized rifle and tank regiments into comparable combined-arms formations. One type of regiment is infantry heavy, while the other is tank heavy. The motorized infantry regiment would be useful, for example, in assaults against prepared defenses. A tank regiment, exploiting the speed, weight, and shock power of its tanks, would be useful for rapidly shattering weakly prepared defenses. This convergence indicates the continued adherence to fielding two distinct types of regiments and two types of divisions

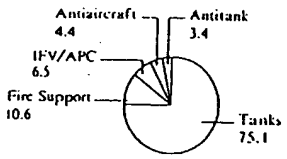
The Soviets have sought to provide their infantry with a vehicle that could operate with tanks in all types of terrain and battlefield conditions. Their doctrine requires that infantry vehicles have both a long-range antitank capability (3,000 to 4,000 meters) provided by ATGMs and a shorter range capability (1,000 to 2,000 meters) with automatic cannon for use against lightly armored targets. The required protection levels of infantry vehicles have also apparently been increased, largely as a result of changes in the threat posed by NATO. Previously, Soviet infantry vehicles were protected only against shell fragments and small-arms fire. They are now required to be protected against small-caliber automatic cannon fire such as the 25-mm cannon on the US M2 Bradley. The Soviets' latest IFV, the improved BMP-2, has significant firepower and protection advantages over the Bradley (see appendi

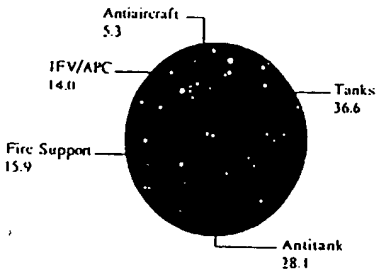
[redacted] economic constraints and maintainance considerations have compelled them to field a mix of fully capable tracked infantry vehicles and less capable wheeled infantry vehicles whose primary advantages are that they are less expensive, easier to maintain, and faster. The trade-off of capability for cost has enabled the Soviets to mechanize a large number of MRDs faster than if they had chosen to procure an entirely tracked force. Typically an MRD has one regiment equipped with tracked vehicles and two with wheeled vehicle

Figure 3
Soviet Perception of Distribution of Power Within Maneuver Divisions, 1960 and 1985[a]

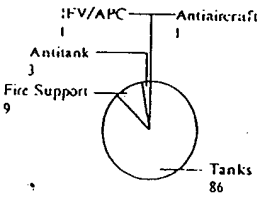
Percent

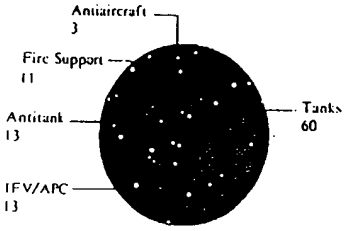
Motorized Rifle Division



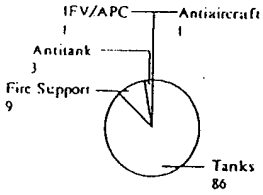


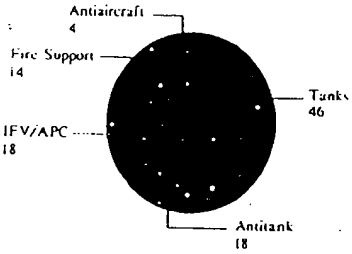
Tank Division Equipped With T-80s





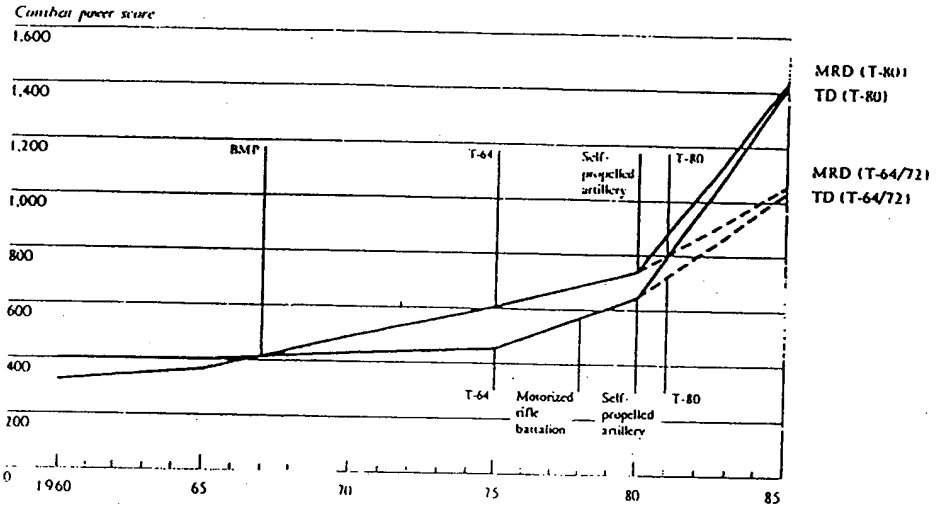
Tank Division Equipped With T-64s or T-72s





[a] Pies are scaled to reflect overall growth in combat power.

Figure 4
Soviet Perception of Growth in Combat Power of Motorized Rifle and Tank Divisions, 1960-85



Limitations of Soviet Mechanized Infantry

The Shrinking Soviet Squad

The infantry squad is the basic combat element of the ground forces. As the organization and equipment of infantry formations have evolved, the number of infantrymen in a squad available for dismounted assaults in many armies has shrunk:

	1960s	1980s
Soviet	9	7
US	10	6
British	10	7
West German	6	6

This has been due chiefly to the introduction of and the improvements to infantry vehicles. Beginning with the introduction of the BMP, the commander usually did not leave the vehicle during dismounted squad operations, further reducing the number of infantrymen available. For these reasons, the number of infantrymen available for assaults has progressively shrunk from 14 in 1950 to seven in 1985 (see figure 6).

The development of Soviet and Western combined-arms forces for modern battlefield operations has resulted in the substitution of firepower in the form of

Figure 5
The Improving Equipment of Soviet Mechanized Infantry

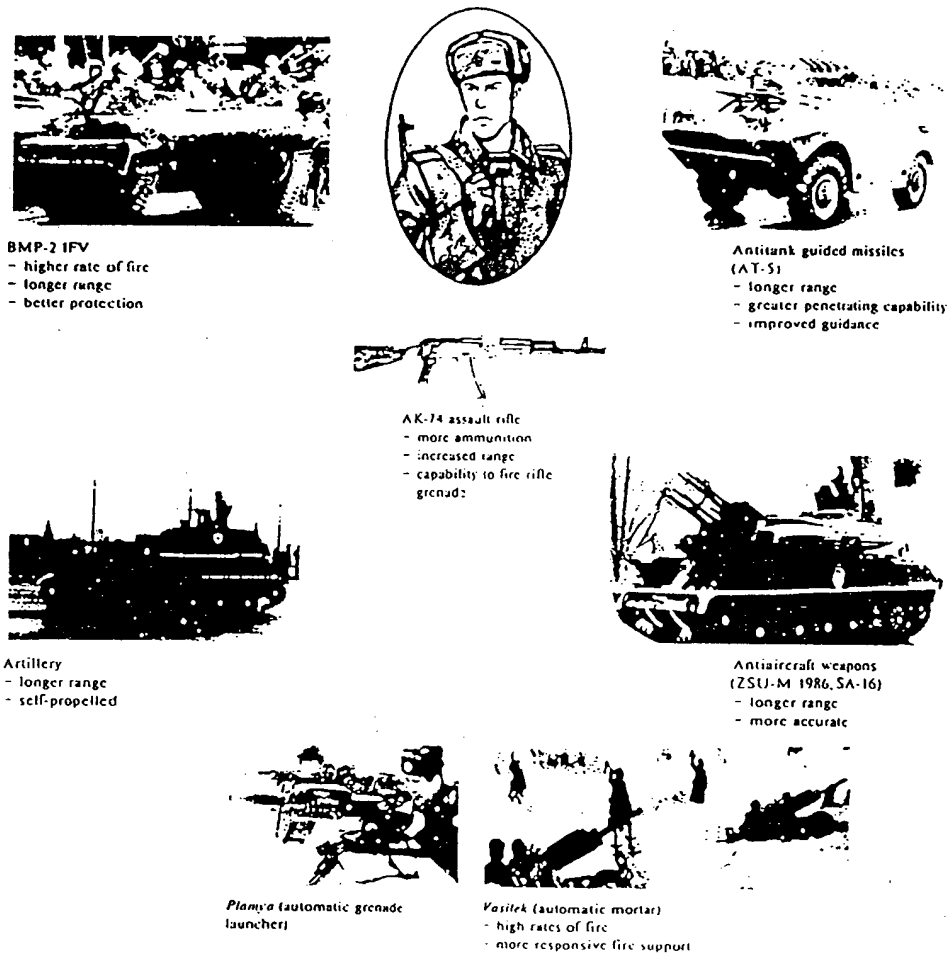
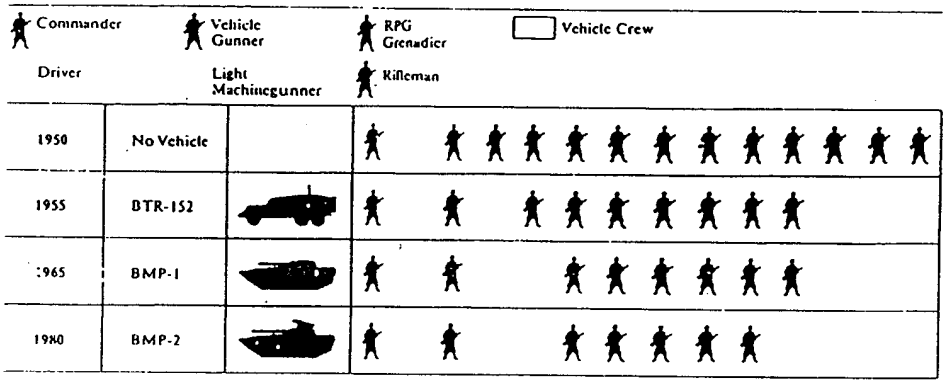


Figure 6
Evolution of the Soviet Motorized Rifle Squad



heavily armed infantry vehicles for dismounted infantrymen. For example, although automatic grenade launchers have been introduced in Soviet motorized rifle battalions, in an assault firepower could not fully compensate for a man on the ground with a rifle. This is especially important in urban warfare.

World War II and postwar military experience has shown that smaller infantry squads are less capable of absorbing casualties and maintaining the cohesion and effectiveness necessary to accomplish these missions. The offensive, the most common Soviet mission, will expose infantry to higher casualties than those from defensive operations, where defenders are occupying prepared positions. The shrinking squad size could quickly blunt the Soviet capability to conduct dismounted infantry assaults. Even a modest drop in rifle strength would rapidly degrade the offensive capability of a Soviet MRD.

Shortfalls in Infantry Mechanization

The Soviets have the bulk of their most modern infantry vehicles in their forces opposite NATO, where all but a small number of motorized rifle regiments have been mechanized. Nearly half of the rest of the force, however, lacks a full complement of their authorized infantry vehicles (see figure 7). In the initial period of a war, some of the shortfalls could be alleviated by drawing on infantry vehicles stored in national-level depots or by using vehicles salvaged from the battlefield. Nonetheless, a large number of Soviet MRDs would still have only truck transportation.

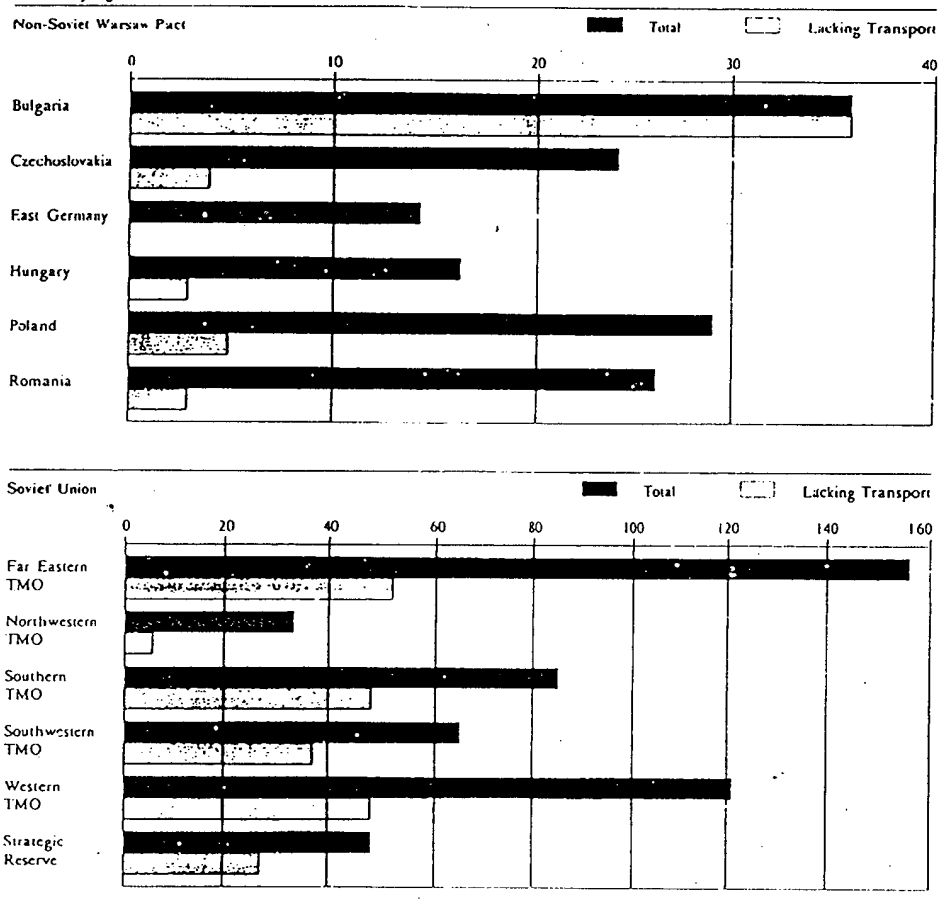
In some areas, such as in the southwestern USSR, this shortfall could have an immediate and detrimental impact on operations.

Truck-mounted infantry, over half of the Soviet forces in the region, would be of limited use

Figure 7
Motorized Infantry Regiments Lacking Transport

Note scale change

Number of regiments



against coherent NATO defenses, especially if they were committed to operations against NATO forces in West Germa

The infantry vehicle shortfall in the rest of the Soviet force might not have as significant an impact. If committed against NATO, these divisions could be used in areas where the Soviets were on the defensive, freeing more capable divisions for offensive combat. The Soviets may also plan to use these nonmechanized MRDs only after NATO forces had been severely reduced. In areas such as South Asia, potential opponents would not be as formidable as NATO, allowing a greater role for nonmechanized infantry. Some of the MRDs lacking armored infantry transport might also be designated as a reserve during a protracted war or as a source of trained replacements for better equipped uni

Almost all of the NSWP countries have mechanized their infantry forces to a level at least equal to Soviet forces in the Western TMO. Only Bulgarian infantry lacks sufficient infantry transport. The Bulgarians are making efforts to correct this deficiency, including the production of domestically modified infantry vehicles. In the rest of the NSWP forces, only low-strength divisions lack transport for infantry, but these divisions would probably not be committed to initial operations against NAT

Problems of Command

The task of effectively training and employing a modern Soviet motorized rifle regiment has become progressively more complex and difficult, especially in the last 10 years. Until the early 1970s, regimental commanders were chiefly responsible for directing the maneuver of their own infantry and tanks. Since then, they have been given additional responsibilities for control over the employment of fire-support, antitank, and antiaircraft weapons, as well as the coordination of tactical air supp

Soviet unclassified writings suggest that commanders have not been consistently successful in welding these varied combat elements into an effective combined-arms formation. For example, Soviet officers are criticized in training exercises for attacking entrenched enemy positions without artillery support or for failing to incorporate air defense or engineer considerations into their operations plan. Evidence [redacted] indicates that the Soviet experience in Afghanistan also has been marked by problems in integrating combined-arms forces into coherent units. The extent of such control problems throughout the Ground Forces is not known. Nevertheless, the military leadership appears to recognize the threat such operational deficiences pose to Soviet capabilities to conduct offensive operatior

Persistent problems in developing combined-arms skills probably result, in part, from shortcomings in the training program. Training is acknowledged in Soviet [redacted] to be generally unrealistic and undemanding, and there appears to be a lack of sufficient specialized infantry training. For example, only two to four training centers for urban operations have been identified within the Western TMO, and, although Soviet doctrine recognizes the need for specialized training in rough terrain, we have no evidence that such training is conducted on an appreciable scale. Similarly, Soviet planners realize that NATO will employ a wide variety of barriers (such as mines and concertina wire), but there is no appreciable training in barrier clear

Outlook for Soviet Mechanized Infantry

Change in Mission

Analysis of the Soviets' writings and organizational changes indicates that they intend to assign mechanized infantry an expanded role for future operations. The increased importance attached to close assault and urban warfare in Soviet doctrine will probably cause continued stress on the role of infantry forces within combined-arms formation

Continued improvements in NATO defensive capabilities will also lead the Soviets to emphasize the role of combined-arms formations structured around mechanized infantry in overcoming these defenses. Improvements in mechanized infantry capabilities may also lead to the assumption of new roles such as exploitation of breakthroughs (see figure

Signs of New Organizational and Structural Approaches

There are at least three possible options the Soviets may consider for further improvement of their mechanized infantry: retaining and improving the existing structure, moving toward a universal division, or radically reorganizing some or all existing divisions into a corps/brigade structur

Retaining the Motorized Rifle and Tank Division. The most likely option is a continuation of present trends. The reorganization of tank divisions into tank-heavy combined-arms formations and the equipment modernization in both tank and motorized rifle divisions have improved the capabilities of both types of units to operate on the modern battlefiel

ndicate the Soviets consider these c.
sions to be essentially equal in combat power, although one is tank heavy, the other mechanized infantry heavy. Retaining the current structure would also be the least disruptive of the three choices in terms of training and equipment procureme

the greatest growth during the next 10 years will probably occur in the quality of assigned fire-support weapons and infantry vehicles. Over the last decade, MRDs have been receiving automatic-cannon-armed BMPs and automatic fire-support weapons such as grenade launchers and mortars. This trend would probably continue with the fielding of automatic-cannon-armed wheeled vehicles and improved automatic fire-support weapons

to further improve MRD capabilities, the Soviets have decided to move toward a force consisting primarily of fully tracked or "heavy" infantry. A significant number of Soviet MRDs, as well as some in the NSWP, will probably convert to a fully tracked structure, or will have at least two tracked regiments and one wheeled regiment (see figure 9). These improvements would significantly enhance the combat capabilities of MRDs opposite NAT

Universal Division. A second but less likely option is the conversion of motorized rifle and tank divisions into universal divisions. The Soviets' militar

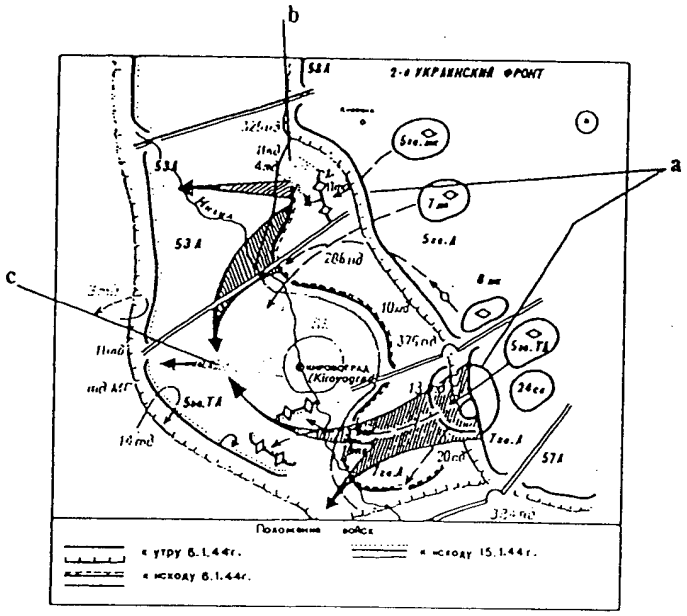
from the middle and late 1970s and recent organizational changes indicate that they may believe that developments in NATO forces will require balanced combined-arms units—including battalions similar to those in the independent army corps—for virtually all operations. The universal division would probably retain four maneuver regimen

Among the benefits of a universal division would be simplification of front- and theater-level staff planning. Staffs would no longer have to consider reorganizations of subordinate field armies to achieve an appropriate mixture of tank and motorized rifle divisions for a particular mission. They would need only to consider the size of the force required. A universal division would also improve combined-arms integration and ease training problems, producing greater combat power. We have no evidence that the Soviets are presently considering a universal division. Such a proposal was advanced in the early 1960s and was strongly debated by senior Ground Forces officers in military journals until then Minister of Defense Rodian Malinovskiy decided against

Corps/Brigade. The least likely alternative is the complete restructuring of the Soviet ground forces into army corps composed of brigades. Such corps would be large and would resemble Western divisions in terms of their fire- and combat-support elements (see figure 10) Since 1982 the Soviets have created two new army corps, but these apparently are intended to fulfill special missions. In 1987 the Hungarians began to convert three divisions into two army corps. It is unclear whether a parallel restructuring will occur throughout the Pact or is related to Hungarian efforts to conserve manpow

Conversion to a corps/brigade structure such as in the Soviet new army corps offers improvements in combined-arms capability and sustainability. There are major drawbacks, however. Large-scale conversion would disrupt training, and therefore readiness, for a significant period of time. The increased amount

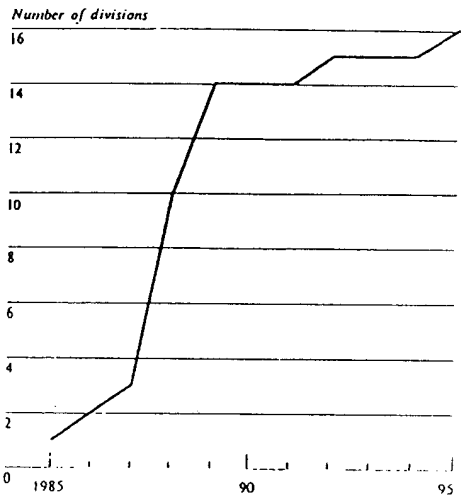
Figure 8
Soviet Concept of Breakthrough and Exploitation:
Kirovograd Operation, 5-16 January 1944



In the Kirovograd Operation, the Soviet 2nd Ukrainian Front, attacking along a 100-kilometer front, pushed back and destroyed elements of the German 8th Army. On 5 January, two Soviet combined-arms armies attacked on the Front's right wing, one on the left (a). The German lines were quickly pierced, and mobile forces consisting of three tank and mechanized corps were committed on the right, and one tank army was committed on the left. The forces on the right wing defeated a two-division German counterattack (b). The Soviet mobile forces linked up west of the city of Kirovograd, encircling elements of the German 8th Army (c) on 7 January. The Soviet forces now paused, apparently because of supply problems, allowing the Germans to transfer four tank divisions to the threatened sector. Soviet attempts to renew the offensive were halted by the German armored counterattack, stabilizing the frontlines until the spring. The maximum Soviet penetration was 70 kilometers.

This illustration is drawn from a text prepared in the Frunze Combined-Arms Academy entitled *Encirclement Operations and Combat* (1983). The forces involved are comparable to a modern Soviet front-level operation.

Figure 9
Projected Soviet Creation of "Heavy" Motorized Rifle Divisions in the Western TMO[a]



[a] New army corps are counted as MRDs in totals.

of support equipment would also be a major expenditure. The creation of the smaller Hungarian corps will be less expensive but will still cause significant training disruption. For these reasons, the Soviets will probably create only nine new army corps, intended for special functions such as acting as an operational maneuver grou

Continued Shortfalls in Infantry Mechanization

We expect little increase in the number of infantry units equipped with a full complement of infantry vehicles by the year 2000. If production rates remain at current projected levels, a high proportion of the new vehicles will be replacements for older ones nearing the end of their 30-year service life. We expect the greatest upgrade to take place in Soviet forces in the Far East. These forces will probably be mechanized to a level comparable to that of Soviet forces opposite NATO. Soviet Far Eastern forces have traditionally received new equipment only after it has been widely fielded in the West but ahead of other TMOs. Only modest improvements are expected in the mechanization of forces in the southern, southwestern, and central portions of the Soviet Union. The projected changes will improve Soviet capabilities against China but will not significantly alter the availability of reserves from the interior MD.

Developing Soviet Assault Tactics

Future improvements in Soviet infantry vehicle protection and firepower may make mounted infantry less vulnerable to NATO antitank weapons, thereby allowing the infantry to dismount closer to NATO positions. Increased numbers of rapid-fire weapons in Soviet assault forces could also provide more reliable suppressive fire, helping the infantry to dismount and cover the distance to opposing forces without sustaining severe losse

There are also indications that Soviet infantry is adopting more effective tactics for closing with the enemy. Soviet infantry in East Germany was recently observed using a US-style "bounding-overwatch" procedure, in which platoon elements alternate in moving forward and providing covering fire. This tactical maneuver enables infantry to more effectively conduct a dismounted assault than by using a line-abreast formation that has been the Soviet practice.

Implications for NATO

In a conventional European war, NATO soldiers in Central Europe would face a firstline Soviet force with large numbers of mechanized infantry in combined-arms formations that would be equipped with relatively well-protected, heavily armed, and maneuverable infantry vehicles. The presence of these vehicles would complicate NATO defensive efforts that would already be burdened with defeating heavily

Figure 10
Possible Soviet Organizations for Employing Mechanized Infantry in Combined-Arms Operations

	MRD	New Army Corps	Hungarian Army Corps (Mechanized)	Uniformed Division
	3 Motorized rifle regiments 1 Tank regiment 1 Artillery regiment 1 SAM regiment	2 Tank brigades 2 Mechanized brigades 1 Air assault regiment 1 Artillery brigade 1 SAM brigade 1 MRL battalion	3 Motorized rifle brigades 1 Tank brigade 1 Artillery brigade 1 Antitank battalion 1 SAM brigade	4 Mechanized regiments 1 Artillery regiment 1 SAM regiment
Men	14,000	20,500	17,000	(same as MRD)
Tanks	220	394	391	
BMP IFVs	284	726	105	
BTR APCs	149		316	
Self-propelled artillery	126	120	78	
Towed artillery	-	48	54	
MRLs	18	96	18	
120-mm self-propelled combination gun/mortar	-	92	-	
120-mm mortar	72	-	54	
SAMs	36	88	40	
Self-propelled antiaircraft artillery	16	24	20	
BMD IFVs	-	54	-	

armored and lethal Soviet tanks. In most sectors, until the Soviets penetrated NATO positions, the bulk of the assault forces would be mechanized infantry.

The estimated armor protection levels of Soviet infantry vehicles might require NATO forces to expend ATGMs against these vehicles instead of reserving them for use against tanks. The assessed protection of the upgraded BMP tracked IFV (with add-on armor) through the frontal 60-degree arc makes the upgraded BMP impervious to .50-caliber machinegun and 20-mm cannon fire, including armor-piercing discarding sabot rounds; it could probably be pierced by a 25-mm cannon, but only within 500 meters.* This would virtually preclude the use of the main gun mounted on NATO infantry vehicles as a defense against Pact

* Upgraded BMP-1 and BMP-2 IFVs are protected with additional armor on the turret, glacis, and side of the vehic

BMPs until NATO fields improved ammunition in the early 1990s. Because the cannon on the M2 Bradley could penetrate the upgraded BMP only at short range, the Bradley could be defeated by approaching BMP-2s from ranges of 3,000 meters before it could return effective fire.[1] BMPs without the upgraded armor would be vulnerable to 25- to 30-mm cannon fire, but not to .50-caliber machineguns. (See the appendix for a detailed explanation of infantry vehicle protection

US 30-mm aircraft cannons, mounted in the A-10 Thunderbolt, will also remain effective against the upgraded BMP armor. The 20-mm gun carried on older AH-1 Cobra helicopters will be effective against the upgraded BMPs only at ranges under 300 meters frontally and 1,000 meters from the side. Other air-delivered top-attack munitions will remain effective against all Soviet infantry vehicl

The firepower of upgraded Soviet BMPs, combined with their protection levels, places NATO infantry vehicles at a significant range disadvantage. An M2 Bradley engaged against an upgraded BMP-1 would be at a 700-meter disadvantage; against the BMP-2 that disadvantage would be 3,000 meters. This would probably force US commanders either to use the TOW antitank guided missiles carried by the Bradley or to try to close engagement ranges through use of terrain or smoke. It would be difficult for US commanders to differentiate upgraded BMPs from older models at battlefield ranges, and they would probably have to assume that all were upgraded. If TOWs were to be conserved for use against Soviet tanks, the range disadvantage would place a premium on the ability of US commanders to maneuver their units tactically. NATO mechanized infantry would probably have to rely more on artillery and air support or be reinforced with more antiarmor weapon.

The range disadvantage of NATO armored vehicles could persist into the future. Improvements in protection levels on the M2 Bradley could be offset by developments in Soviet 30-mm ammunition or, more likely, use of a larger-caliber automatic cannon on the new tracked IFV. We assess that a new Soviet tracked infantry vehicle will be in operation by 1990 and will feature protection levels at least equal to upgraded BMP-2s. We believe that this next IFV will incorporate laminate armor sufficient to offset gains in the penetration capability of the 25-mm cannon mounted on the M2 Bradley. The new IFV also will probably mount reactive (explosive) armor capable of defeating lightweight antitank weapons such as the Light Antiarmor Weapon (LAW). The Soviets have also employed effective countermeasures to defend against some ATGMs and are likely to attempt to develop others. Medium and large shaped charge munitions will probably remain effective against all light armored vehicles (see appendix

As a war in Central Europe progressed, vulnerabilities in Soviet and NSWP mechanized infantry forces would reduce their advantages against NATO forces. Many Soviet infantry units, especially those in the second echelon, are equipped with older, less capable infantry vehicles that would be at a significant range disadvantage versus the M2 Bradley or British MCV-80. This might compel Pact infantry to dismount at longer ranges or risk greater losses of both vehicles and onboard infantry. In either event, combined-arms cohesion of Pact units would be disrupted, leaving both tanks and mechanized infantry more vulnerable and less effectiv

Military experience indicates that reduction in the numbers of infantrymen in Soviet assault echelons increases the chances that even small-percentage losses of divisional manpower, concentrated among infantrymen, would reduce offensive capability, especially dismounted infantry attacks. For example, the loss of 100 to 150 infantrymen (up to half of the approximately 300 infantrymen in a battalion) in a Soviet motorized rifle battalion would severely degrade its capability to conduct dismounted assaults. If NATO infantry could exploit this problem, an attack by an unreinforced first strategic echelon could be blunted in a short period of time. Engaging the

[1] Such penetration can be achieved by using a tungsten alloy armor-piercing discarding sabot round that reportedly exists for the BMP-2. With the steel armor-piercing round that has been exploited in the West, the BMP-2 probably could defeat the Bradley at a range of 1,500 to 1,800 meters. Add-on armor now in development for the Bradley, however, will probably defeat both these rounds.

Soviets in high-attrition battles, such as in cities, would only speed up the degradation in combat power. Soviet doctrine indicates that, as an MRD sustained casualties, the surviving infantrymen would be concentrated to bring a limited number of battalions up to full strength, producing fewer available units for assault

Appendix

Infantry Vehicles for the Modern Battlefield

Soviet infantry vehicle design requirements have not been modified significantly since the early 1960s, when Soviet designs began to reflect the need to transport and protect infantry on a nuclear battlefield. They continue to call for:

- An ability to keep up with tanks on the battlefield.
- Protection against shell fragments, heavy machine-gun fire, and probably automatic cannon fire.
- Armament consisting of an ATGM for engaging enemy armored vehicles and an automatic weapon for engaging enemy nonarmored and lightly armored targets.
- An ability to carry an infantry squad that can fire from inside the vehicle.
- A fully amphibious capability with minimal preparation.
- A capability to operate in a nuclear, biological, or chemical environment.
- A low silhouette.
- A reliable night-fighting capability.
- A low-production-cost vehicle

Since the mid-1960s, Soviet vehicle designers have attempted to fulfill these requirements with two types of vehicles, neither of which fully satisfies all of the requirements. The first type consisted of tracked vehicles, particularly the BMP-1, fielded in 1965. This design satisfied all of the requirements listed above except for the last—cost and simplicity. The second set of vehicles was a series of wheeled vehicles. These were slightly less maneuverable than their tracked counterparts and were more lightly armed and armored, but were simpler and cheaper to produce. They also were more reliable and had better capability to move over long distance

Soviet Infantry Vehicle Production

The Soviet inventory of infantry vehicles is the world's largest. Currently there are nearly 55,000 BMPs and BTRs (wheeled APCs) in active Soviet army units and several thousand more in training units, maintainance floats, and war reserve stocks. In addition, NSWP ground force units are equipped with an estimated 11,000 infantry vehicles, and a sizable number of infantry vehicles are exported to Third World countries. To support this large requirement, the Soviets, along with their Pact allies, maintain a substantial vehicle production base.

The need to mechanize a large number of Soviet infantry divisions and the continual requirement to keep abreast of technological advances has resulted in a high annual rate of infantry vehicle production. We estimate that some 22,500 BMPs and 16,000 BTRs were produced during the last 10 years. This production rate has been sufficient to keep Soviet forces opposite NATO equipped with a mix of modern tracked and wheeled vehicles, while at the same time allowing for the replacement of obsolete vehicles, or the initial fielding of new ones, in units in the USSR's interic

The BMP Series

The BMP-1 was the first true infantry fighting vehicle capable of supporting the infantry on the battlefield as opposed to only providing transport. Although none of the components in the BMP-1 were state of the art in the late 1960s—the gun, missile, and power plant all had been developed in the late 1950s and early 1960s—their use in the BMP marked a revolutionary departure from previous series of infantry vehicles

In 1980 an improved version of the BMP series, the BMP-2, was fielded. This vehicle featured better firepower and protection, as well as improved suspension, but carried one less passenge

Firepower. Perhaps the most important feature of both the BMP-1 and BMP-2 is their firepower. The BMP-1's cannon and ATGM (AT-3 Sagger) can engage a wide range of targets at ranges up to 3,000 meters. The ATGM is the vehicle's primary antiarmor weapon, and it can kill all NATO tanks except

the more modern US M1 Abrams, German Leopard II, and British Challenger. Its cannon is effective only out to 1,300 meters and is intended for use against unarmored targets and against those within the minimum effective range of the ATGM. It could, however, kill older US tanks such as the M48 and M6

Probably in response to NATO deployment of small-caliber automatic cannon, improved protection of NATO light armored vehicles, and the need to deliver large volumes of direct fire against NATO antiarmor weapons, the BMP-2 mounts a 30-mm automatic cannon. The move to this gun continues to allow BMPs to engage NATO light armored vehicles with the main gun, saving the ATGM for tanks. The 30-mm cannon also gave the BMP-2 a capability against low-flying aircraft and helicopters. It also fires the AT-5 Spandrel ATGM with increased range (4,000 m), armor penetration, and accuracy. The Soviets are also retrofitting the AT-5 system to at least some BMP-

Protection. Unclassified Soviet sources state that infantry vehicles are not meant to be protected from all threats. For its size and weight, the BMP-1 achieved a considerable degree of protection, having sufficient armor to defend itself against small-arms fire up to .50 caliber and shell fragments. Any shaped charge weapon, such as the US LAW or TOW, could defeat a BMP-1, but NATO's use of such weapons against the BMP would divert resources that might otherwise be used against tanks, which ultimately are the more dangerous target

In the early 1980s, numerous BMPs appeared, chiefly in Afghanistan, equipped with additional armor consisting of side skirts, hullside armor, turret armor, and floormats. The armor modifications in Afghanistan were probably designed to improve protection against light antiarmor weapons (12.7-mm and 14.5-mm machineguns) and antitank mines in the hands of the Afghan insurgents. In addition, the BMP-2 design appears to include a thicker lower front glaci

Mobility. The BMP's diesel engine provides enough power to enable the BMP to keep up with all currently fielded Soviet main battle tanks. The BMP can also compensate for the limited armor protection by using mobility and speed to present a more difficult target to the enem

Production. Since 1965, BMP production has been centered at one large production facility in Kurgan. This plant has produced an average of approximately 2,000 to 3,000 BMPs per year. Until 1985 the BMP-1 was the plant's main product, but since then production has shifted completely to the BMP-2. The Kurgan plant has recently been modernized with new machine tools that are probably intended for production of a follow-on vehicle to replace the BMP series. This new vehicle will probably enter production by 1990

The BTR Series

In 1963 the BTR-60PB was the first wheeled vehicle fielded to satisfy the requirements listed above. In 1978 the improved BTR-70 was introduced. It featured better protection and more powerful engines. The BTR-80, first seen in 1985, is the latest development in wheeled armored infantry transporte

Firepower. The BTR-80 is armed with a turret-mounted 14.5-mm heavy machinegun, which is designed, according to unclassified writings, to be used primarily against unarmored enemy targets and, secondarily, against lightly armored targets and helicopters. The BTR-80 lacks the antitank capability that is found on the BMP. The crew or passengers of the BTR-80 would carry rocket-propelled grenades or the 30-mm AGS-17 automatic grenade launcher, but neither is capable of defeating newer NATO tanks. Moreover, the weapon operator would have to expose himself from a vehicle hatch to fi

Protection. The BTR-80 reportedly features improved protection over that of the BTR-70. The BTR-70 is protected against .50-caliber machinegun fire through

the frontal arc but is probably vulnerable to perforation by 25-mm cannon fire out to ranges of 3,000 meters.[4] Like the BMP, the BTR-80 would be vulnerable to shaped charge weapon

Mobility. In contrast to the BTR-70's twin gasoline engines, the BTR-80 has a single diesel engine that increases the vehicle's power and mileage and reduces its vulnerability to fuel fires. Because of the higher ground pressure of wheeled vehicles, the BTR-70's cross-country maneuverability is only about 90 percent that of the BMP. Soviet sources, however, do not appear to believe that this is an operational shortcoming. A recent unclassified description of the BTR-70 boasts that the vehicle can carry out successful combat actions in any geographic region or climatic zone. This indicates that the Soviets believe that a wheeled vehicle can meet the requirement that an infantry vehicle be able to accompany tanks through all types of terrain

Production. Production of the BTR series has been shared by a number of plants, but since the mid-1980s BTR production has been concentrated at a plant in Arzamas. BTRs have been turned out at an average rate of approximately 1,000 to 2,000 per year, a level similar to that of the BMP. By 1990 it is probable that a follow-on to the BTR-80 will be in production

[4] See DI Research Paper

Future Soviet Infantry Vehicles

Soviet [redacted] indicate that the Soviets remain firmly committed to armored forces on the battlefield in the face of qualitative jumps in the effectiveness of conventional antiarmor weapons. All available evidence indicates that they are heavily involved in new infantry vehicle program.

The Soviets have good reasons to continue to design new infantry vehicles. The BMPs and BTRs both were designed against a set of requirements that are becoming dated in the face of continual improvements in conventional weapons. New Soviet tanks currently under development may also demand a more capable infantry vehicle if combined-arms integrity is to be further develope

Past practice and unclassified writings indicate that the next generation of infantry vehicles (tracked and/or wheeled) will share a common chassis. The Soviets refer to this concept as a "family of vehicles." For example, the BMP chassis has been used as the basis for command, reconnaissance, ambulance, and probably self-propelled mortar version

[redacted]