

# Helmuth von Moltke, Memorandum on the Effect of Improvements in Firearms on Battlefield Tactics (1861)

## Abstract

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In this memorandum from 1861, [Helmuth von Moltke](#) (1800–1891), the first Chief of the Prussian General Staff, discusses new military tactics and technological improvements in warfare, especially the increased firepower of the needle gun and the artillery. Moltke, who went on to become the most important military figure of the early German Empire, had already played a decisive role in the wars against Denmark (1864) and Austria (1866). His comprehensive system of preliminary war measures allowed Prussia and its German allies to defeat France in 1870–71.

## Source

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### Remarks from April 1861 on the influence of improved firearms on tactics.

It is generally recognized that the great improvement in firearms will entail a substantial change in fighting methods in future wars.

There are no experiences to draw on yet, because the new weapons had not achieved their present perfection during the most recent campaigns, and they were employed on terrain that reduced the impact of firepower at a great distance.

Therefore, the influence of the new weaponry on tactics can only be derived in theory from its nature and characteristics. It requires: visibility of the target, knowledge of the latter's distance, and steady delivery of fire.

If these conditions are met, then the Prussians' rifled cannons will hit any target within a range of 2,500 paces that the eye can see with approximately the same accuracy. A troop of men or horses, or an artillery piece, constitute target objects that can be hit at least once in two shots. With this heightened accuracy, the artillery increases the effectiveness of the blasts and explosions of its shells so much that it becomes impossible for a troop drawn up in close formation to hold under fire from a rifled battery at a distance of a quarter mile.

On open ground, the enemy can only find protection in movement and scattered formation.

The Prussian infantry rifle combines great accuracy at up to 600 paces with the possibility of extraordinarily rapid fire, an undeniable advantage if its use is saved for the really decisive moments of the battle. Within this expanded area of the infantry's impact, even dispersed swarms of the enemy cannot hold out unprotected in place.

We may harbor the conviction that, on the occasion of a war breaking out in the not too distant future, none of our neighboring powers will have brought their firearms up to the same level of perfection as those of the Prussians. A sustained artillery battle at a great distance or a standing infantry battle between lines of riflemen cannot bring any success for our adversaries, and the more certain a rush forward, an assault in scattered swarms, followed by an advance of units in closed formation, especially when we are dealing with the French.

When the target object moves, and the known range thereby becomes unknown and changing, when an

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immediate threat hampers the steady delivery of fire, then the impact of rifled artillery and the infantry rifle is more easily diminished than is the case with smoothbore guns with a flatter trajectory for the shells; at the closest distances anyway, the effect of rifle cartridges is weaker than that of the smoothbore.

So how are we to meet the enemy's rush forward? Should we meet him halfway, outbid him in the offensive? Does the moral element of the thus raised spirits offset the material advantages of our superior firearms? For by moving, in most cases, we mask our batteries and forgo the full firepower of the artillery and most of the infantry.

When on otherwise favorable terrain the enemy is unable to draw up within a quarter of a mile, then it will also only be able to begin its attack from a great distance. A few hits from the rifled guns will blast that column apart. Two columns of a battalion will send several hundred bullets against attacking cavalry and as many as 1,000 against infantry before the attackers reach them.

One is tempted to declare it impossible for such an attack to succeed if the defender does not lose his head.

The right thing would have to be that we should await the attack quietly in the holding position and up to the very last moment, exploit the terrible impact of the infantry fire at close range as well, and only then have our side return the attack in close order after catching its breath. The soldier would have to be made completely aware of the intention. He would have to be told in advance that the enemy will come at us with furious screams, that we will deliberately let this happen so that we may ultimately knock him down with bayonet and rifle butt. The troops assigned this task may, while the skirmishers continue to fire uninterruptedly, stand ready in closed detachments, since they will have little to suffer from the fire of the assaulting adversary. The firmest resolve to attack set against the equally firm resolve not to yield must, by every reasonable calculation and under otherwise identical conditions, fail. For since the advantages of improved firearms only have their proper effect in standing battle, they will be at a disadvantage during movement, and the first foolhardy advance against our front might easily be the last.

The attack has become much more difficult on a position than its defense, and the defense during the first stage of an engagement has the decisive advantage. It will be the task of a skillful strategic offensive to force the enemy to attack a position chosen by us, and only when casualties, shock, and fatigue have exhausted him will we even go over to the tactical offensive.

If positions then take on greater significance again, the question arises as to which characteristics determine a good defensive position under present conditions.

If the strength of the defense lies in the effects of its fire, that is already reason enough to draw our attention to the terrain: The strongest possible position would be one with an open level field in front of it, and undulating, easily covered, and passable terrain behind it. The frontline obstacle, which was once the main determinant of a position's value, can rightly be dropped. We do not wish for the enemy to be held back from attacking our front. A soft wave of terrain, occupied by marksmen and a rifled battery, with a clear field of fire of 3,000 to 5,000 paces ahead of it, forms a formidable position. It allows our reserves to be placed under cover and, even more importantly, to remain unseen, and our cavalry can attack unhindered across the terrain, assuring all arms the greatest possible impact.

The smaller the prospect of success for a frontal attack, the more probable are flanking maneuvers. Now as ever, villages, patches of forest, etc. form desirable flank protection, yet the absence of such local features can even be replaced by a strong rifled artillery battery. The intensity and range of its fire compels the adversary to move so far out in order to avoid it that a surprise of our countermeasures is

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hardly possible.

We counter the probability of an enemy flanking maneuver with the strength of our reserves and the depth of their position.

Given the effectiveness of our fire, we only need to occupy the front lightly and can keep the greater part of our forces in reserve. The range of the enemy's artillery also consigns the reserves to a position in the rear, from which we can form a new front that much more easily.

[...]

It should now have been demonstrated that there is a positive advantage for us, if we act defensively in a tactical position, which the enemy is forced to attack for strategic reasons.

But he is not always forced to do so, and his extended flanking maneuvers can only be countered by our offensive. Moreover, the advantage of the defense ceases as soon as there is no open terrain before our front.

If the previous remarks are correct, it follows that we will absolutely avoid an attack wherever the enemy is in a position that secures him the advantages of an open front. A mass advance across open ground, as occurs on our maneuver areas, is useful for practice in regulation movements and in the handling of troops, but it can hardly be used against an enemy with good cover.

If we find the enemy in the kind of position that permits his firearms their full impact while restricting that of ours, we will have to avoid attacking there. Strategic movements, i.e., marching outside the range of enemy fire, will transfer the tactical decision to another field of battle, and even retreat will postpone it [the tactical decision] for this purpose.

On covered, hilly, uneven ground, the advantages balance out to the extent that they no longer afford the stationary component a wholly decisive superiority. The strength deriving from the terrain sections will still always be to the advantage of the defense, but the moral aspect throws a strong weight onto the offense's side of the scale.

Once we have opted for the offensive, we will immediately organize our vanguard so that it alone can exploit the advantage of surprise to the widest extent.

We conceive of the vanguard of an army corps as consisting of the first infantry brigade, at least one light cavalry regiment, and a battery.

A relatively strong cavalry is of the utmost importance for the vanguard. The security of the army depends on it. It stays in immediate proximity to the enemy because it can withdraw at any time. Once the infantry is engaged, however, it is not always possible to break off the battle.

The vanguard's battery will, in any event, consist of rifled artillery. This artillery should, it is true, be thoroughly stable in battle, and it can do this owing to the extraordinary range and precision of its fire, although this is less significant at distances up to 1,000 paces. At the same time, its guns are light and can follow every movement in rapid marching formation, even of the cavalry. It is important, right at the outset of battle, to oppose the adversary with guns superior to his, in order to force his troops to take up their positions and reveal their strength and location while still at a great distance from us. The terrain will decide whether the vanguard should not also be assigned half a howitzer battery. If the terrain is not overly hilly, then the reserve cavalry will initially follow behind the vanguard during an advance on the enemy. Under the protection of the vanguard and cavalry, the rest of the corps will almost always be able to use more than one road, even if they are a mile apart, because the concentration toward the middle

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column, which marches with the artillery on the main road, can always be effected within an hour's time. In this case, the vanguard needs to have at least an hour's lead as well.

If the initial engagement allows the position of the enemy to be identified, then the main body's march should already be directed toward that point where the main attack is supposed to take place. For we have shown that every lateral movement within the adversary's field of vision, leaving aside the fact that his offensive would bring it to a standstill, entails a detour that rules out any impact from surprise and provides plenty of time for countermeasures. This—*on s'engage partout et puis l'on voit*<sup>[1]</sup>—would cost very great sacrifices, where the advance and the withdrawal at such distances come under fire.

For our attack we choose the terrain that affords the best protected approach to the enemy formation possible and that brings its masses into view, making it possible to reach them with our rifled artillery. [Only] in the rarest of cases will this lead to a frontal attack.

Among the few rules that can be provided in advance is that we never attack villages, patches of forest, etc., in which the enemy has ensconced himself for defense if it is not absolutely necessary. This will, however, sometimes be the case.

With rifled artillery, we possess the means to destroy, within a very short time, almost every kind of building, to knock down walls, to set fire to villages and cities, and to scatter reserves as soon as their position has only just been guessed. Our infantry rifle is superior to all others, so that our skirmishers outfitted with the same weapon and occupying a sheltered position must gain the upper hand, even against the enemy in a sheltered position during a lengthy fire fight supported by artillery. Should our skirmishers go without cover, if the adversary has the advantage of ranges he knows exactly, and, additionally, an open front of 600 to 800 paces, then the gun battle will lead to extremely high casualties, but not to a corresponding weakening and disruption of the enemy.

In this case, where success is admittedly doubtful, the most foolhardy confrontation will nonetheless cost fewer casualties than holding under fire. The only thing that then remains is to lead the skirmishers against the fortified line and engage their defenders in close combat so as to prevent them from directing their fire against the closed detachments following the skirmishers. The company column formation is the appropriate one for this attack. A cavalry detachment has to remain at hand in order to counter the enemy's. Hand-to-hand combat in front of the enemy position is desirable since it prevents enemy fire and allows our columns to approach in the meantime.

During the seizure of a village, great confusion immediately ensues. Leaders no longer have their troops under control. If we are dealing with the French, we can be sure that they are still holding on in some fixed structure in order to make possible the recapture of the village. The rifled artillery must then complete the demolition of these redoubts, and the infantry must settle in to defend the rear of the village, if possible, before the counterattack takes place. If two fixed points in the terrain behind which the enemy has ensconced himself lie at least 1,200 paces apart, then, after the rifled artillery has ravaged the enemy's center, we will push through in the middle between the two fixed points, while at the same time attacking one of these points in front and flank, and then attacking in the rear.

We refrain from following the offensive engagement in its infinite diversity further here; moral momentum is more decisive than cold calculation anyway. But one should never forget that the greatest bravura runs afoul of an insurmountable obstacle, and one such obstacle is not merely a six-foot deep moat but also a completely accessible, but open front in which firearms achieve an annihilating effect. The good rider does not urge even the most daring steed against an obstacle that it cannot clear.

It would be wrong to state in regulations that a troop may not advance across open ground against an enemy whose positions have good cover. But every higher leader needs to be clear on what this means.

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The offensive will retain its validity in war in the future; it is only a question of letting it happen at the right time, not rushing forward in restless haste when staying in place is obviously an advantage.

The first decision is to not yield; the second, to attack, comes naturally when we see the enemy's losses, exhaustion, and confusion.

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## NOTES

[1] "You engage and then you see what happens." This was a favorite motto of Napoleon—trans.

Source: Helmuth von Moltke, *Moltkes militärische Werke*, edited by the Great German General Staff. Berlin: Ernst Siegfried Mittler und Sohn, 1896–1912, vol. 2, pp. 29–32, 36–39.

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