Volume 3. From Vormärz to Prussian Dominance, 1815-1866
Helmuth von Moltke: Memorandum on the Effect of Improvements in Firearms on Battlefield Tactics (1861)

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 artillery pieces. Moltke, who went on to become the most important military figure of the early German Empire, contributed essentially to the victory of Prussian troops in the wars against Denmark in 1864 and Austria in 1866. His comprehensive system of organizational preparation also allowed Prussia to defeat France in 1870-1871.

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

It is generally acknowledged 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 current perfection during the last campaigns, and they were employed on terrain that reduced the impact of firepower from a distance.

Therefore, the influence of the new firearm on tactics can only be derived in theory from its nature and characteristics. The firearm requires: visibility of the target, knowledge of its distance, and calm delivery of fire.

If these conditions are met, then the Prussians' rifled guns will hit any target within a range of 2500 paces [2000 meters] with approximately equal accuracy, to the extent that the human eye is still capable of clearly recognizing an object. A troop of people or horses, [or] a [piece of] artillery constitute target objects that can be hit at least once with two shots. With this heightened accuracy, the artillery achieves an enhanced effectiveness for its shells from percussion and explosion, so that it will be impossible for troops drawn up in close formation to stay put under fire from a rifled battery at a distance of a quarter mile.

On an open plain the enemy can only find protection by movement and scattered formations.

The Prussian infantry rifle is still capable of combining its great accuracy at up to 600 paces [480 meters] with the possibility of extraordinarily rapid fire, an indisputable advantage if its

application is saved for the really decisive moments of battle. Within this extended sphere of activity for infantry, even enemy swarms in loose formation are incapable of holding out when unprotected and at a standstill.

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 its firearms up to the same level of perfection as those of the Prussians. A sustained artillery battle at a great distance, a standing gun battle between lines of marksmen, cannot bring any success for our adversaries, and it is all the more certain that [there will be] an impetuous beeline, a stampede in scattered swarms, followed by the advance of units in closed formation, especially when we are dealing with the French.

Whenever the target object moves, [and] the familiar range thereby becomes an unfamiliar, changing one, whenever an immediate threat impairs the calm [required for] delivering fire, then the impact of the rifled gun, as well as the infantry rifle, is more easily diminished than is the case with a smoothbore, with a flatter trajectory for the shells; at closer ranges anyway, the grapeshot impact of the rifled guns is weaker than is the case with smoothbores.

How, then, is the impetuous crush of the enemy to be faced? Should we meet him halfway, outdo him offensively? Does the moral element of higher spirits created thereby offset the material advantages of our superior firearms? For while we are on the move, in most cases, we are masking our batteries and dispensing with the full shooting impact of the artillery and the largest part of the infantry.

When, on an otherwise favorable terrain, the enemy is not allowed to draw up within a quarter of a mile, then it will also only be able to start attacking from a great distance. A few hits from the rifled guns will blast that column apart. The two spearheads of a battalion will send several hundred bullets toward an attacking cavalry, and up to 1000 against the infantry, before they are reached by 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 respond to the attack decisively after catching its breath. The intention needs to be made completely clear to the soldiers. They would have to be told in advance that the adversary is going to press on with furious screams, that we are intentionally going to let this happen, so that we may ultimately knock him down with butt and bayonet. The troops assigned this task may, while the marksmen continue to fire uninterruptedly, stand ready in close formation, 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 – is bound, by every reasonable calculation [and] under otherwise identical conditions, to fail. For since the

advantages of improved firearms only have their proper effect in standing battle, the moving component will turn out to be at a disadvantage, and the first daredevil *en avant* against our front might easily be the last.

Attacking a position has become fundamentally more difficult than defending it, and defense during the first stage of a battle a decisive advantage. It will be the job of a skillful strategic offensive to force the adversary to attack a position chosen by us, and only when casualties, shock, and fatigue have exhausted him will we even take the tactical offensive.

If, accordingly, positions take on greater significance again, then it must be asked which characteristics determine good defensive equipment under current circumstances.

While the strength of defense lies in the impact of firepower, that is already reason enough to draw our attention toward the plain; i.e. the strongest possible position would be one which would have in front of it the open level field, and behind it an undulating, easily covered, and passable terrain. 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 an open shooting field of 3000 to 5000 paces ahead of it, establishes a formidable position. It allows our reserves to be lined up under cover and, even more importantly, to attack unseen and unhindered with our cavalry [and to attack] over their heads, allowing every weapon the greatest possible impact.

The smaller the prospect of success for frontal attack, the more probable are flanking maneuvers. Now as ever, villages, forest plots, etc. create desirable flank protection, yet in the absence of such local features even this can be replaced by a strongly rifled battery. The intensity and range of its fire compel the adversary to move so far to the flank that it is hardly possible for our countermeasures to be taken by surprise.

We counter the probability of enemy flanking maneuvers 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 major portion of our forces in reserve. The range of the enemy artillery also assigns the reserves a position far to the rear, from which it is even easier to take on a new front.

[. . .]

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 will be forced to attack for strategic reasons.

But he will not always be forced to do this, 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 facing 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 the open plain, as occurs on our maneuver [exercise] fields, is useful for practice in regulation movements and in the operation of troops, but it can hardly be performed as an attack against an enemy who is under cover.

If we find the adversary in the kind of position that allows his firearms their full impact while restricting 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.

In covered, hilly, and cut up ground, the advantages are leveled out to the extent that they no longer afford the stationary component a wholly decisive superiority. The strength deriving from the terrain divisions 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 highest importance for the vanguard. The safety of the army depends on it. It stays in immediate proximity with the enemy, because it can withdraw [from confrontation with the enemy] at any time. Once the infantry is engaged, however, it is not always within its power 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 of up to 1000 paces. At the same time it is a light artillery, and in the rapid march formation it can follow every movement, even of the cavalry. It is important, right at the outset of battle, to oppose the adversary with an artillery that is superior to his, to start forcing his troops to develop their formation and to display his strength and position 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 perforated, then the reserve cavalry will initially follow behind the vanguard during an advance against the enemy. Under cover of the vanguard and cavalry, the rest of the corps will almost always have to use a different road for each brigade, even if these roads were to be a mile apart, for the concentration toward the middle column, which marches with the artillery on the main road, can

always be affected within an hour's time. In this case, the vanguard also needs to have at least an hour's head start.

If its opening battle 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*"* – would come at the cost of very great sacrifice, where the advance and the withdrawal at such distances take place under fire.

For our attack we shall choose that terrain which enables the most shielded approach to the enemy position that is possible and that permits seeing its masses, and consequently also reaching [them] with our rifled guns. 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, forest plots, etc. in which the enemy has ensconced himself for defense if it is not absolutely necessary. Occasionally, though, this will be the case.

With rifled artillery we possess the means to destroy, within a very short time, every kind of building, to lay low walls, set fire to villages and cities, [and] scatter reserves as soon as their position has been estimated. Our infantry rifle is superior to all others, so that our marksmen outfitted with the same weapon and occupying a sheltered position must win the upper hand even against the enemy in a sheltered position during a lengthy fire fight supported by artillery. Should our marksmen 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 dubious, the most daredevil confrontation will nonetheless cost fewer victims than holding under fire. The only thing that then remains is to lead the marksmen on in taking a swift run against the field's edge, whose defenders are to be involved in hand-to-hand combat, so as to prevent them from directing their fire against the following troops advancing in close formation. The formation of the company column is the appropriate one for this attack. A cavalry detachment has to remain at hand in order to confront the enemy's. We would wish for a scuffle in front of the enemy position, since it will prevent enemy fire and allow our columns to approach in the meantime.

During the seizure of a village, great confusion is momentarily generated. Leaders no longer have their troops under control. If we are dealing with the French, we can be sure that they will still be holding up in some kind of stable building, in order to enable the recapture of the village. The rifled artillery must then complete the demolition of these redoubts, and the infantry must

* "You engage and then you see what happens." This was a favorite motto of Napoleon – trans.

settle in to defend the back of the village, if possible, before the counterattack takes place. If two stable points of terrain in which the enemy has ensconced himself lie at least 1200 paces apart, then, after the rifled artillery has shaken the center in back, we will push through in the middle between the two, while the attack simultaneously goes on against one of these points in front and flank, and then the attack from the rear will take place.

We shall dispense with following the attack battle in its infinite diversity, for which, anyway, moral impetus is more decisive than cold calculation; yet 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 water ditch, but also a completely accessible but open front, in which firearms can achieve an annihilating impact. The good rider is also one who does not drive the most daring steed against an obstacle that it cannot take.

It would be wrongheaded if one should want to go more or less strictly by the book and assert that a troop may not advance across the plain against an enemy positioned in hiding. Even in the future the offense will keep its influence; it is only a question of letting it happen at the right time [and] not plunging ahead in restless haste when standing still is of momentary advantage.

The first decision would be not to yield; the second, to confront, is self-evident if we keep an eye on the enemy's casualties, exhaustion, and confusion.

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Source: Helmuth von Moltke, *Moltkes militärische Werke* [*Moltke's Military Writings*], ed., Großer Generalstabe [ed. the General Staff]. Berlin: Ernst Siegfried Mittler und Sohn, 1896-1912, vol. 2, pp. 29-32, 36-39.

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