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Strategy and tactics in 1866: The state of the art

Until 1866, the whole history of modern warfare had been one of ever increasing troop numbers and ever more sophisticated fortress and weapons systems. The average army fielded in the wars of the seventeenth century had numbered just 20,000 men. To shield and supply these small arrays of well-trained mercenaries, military engineers like France's Vauban built constellations of star-shaped fortresses along the frontiers and at the crossroads of their kingdoms. Warfare developed precise rules as small, professional armies let loose in vast countries with few supplies unfailingly marched to the enemy and attempted either to engage him or force him back on his forts, where a siege would ensue until the mounting cost in lives, money, and material persuaded one party or the other to cede a province, a daughter, or a sum of bullion.

During the eighteenth-century wars of Louis XIV and Frederick the Great, armies – manned and funded by wealthier, more populous states – grew to an average strength of 60,000 men. They were, however, rarely able to commit more than half that number to the field because of the need to "mask" or keep under observation all the Vauban-style forts that had sprouted along their routes of march. Set-piece battles and sieges remained the norm because it took pharaonic labors just to deploy a thirty-pound howitzer, let alone move it, and because the flintlock musket, introduced in the eighteenth century, though faster-firing than the arquebus it replaced, was still hopelessly inaccurate at ranges beyond 100 meters.[1] Thus, line regiments had to be marched to within a stone's throw of each other at which point they would raise their muskets and fire volleys at terrifyingly short range. Here the advantage went to the line that fired last, for, after absorbing the enemy's volley, it could shuffle forward, shortening the range still more and, with the proverbial "whites of the enemy's eyes" in sight, deliver a devastating salvo of .70 caliber balls. Crude tactical considerations like this one accounted for a notorious incident at Fontenoy in 1743, when French and English officers

1 Martin Van Creveld, *Technology and War* (New York: Free Press, 1989), pp. 87–95, 113.

closed up their opposing lines and then, with exaggerated politeness, each invited the other to fire first.[2]

War changed dramatically in the nineteenth century, when Napoleon Bonaparte introduced "batteries" of lightweight, eight- and twelve-pound cannon, which fired light projectiles and could be limbered up and moved quickly by horse teams. The new French "battery system," which concentrated the fire of eight guns on a single target, wrought havoc everywhere it struck and accounted for the rapid adoption of this system by all armies. In the French Revolutionary and Napoleonic Wars, the ratio of field guns to infantry increased on all sides, making war a much more dangerous business. By 1815, with his regiments thinned by twenty years of war, Napoleon increasingly used massed batteries of artillery to compensate for his shrinking numbers of men.[3] Carl von Clausewitz's *On War*, published in 1832, contained the classic synopsis of Napoleonic combat, describing the descent of a man from the rear echelons of a battle to its front line. At each interval – corps, division, and brigade – he remarked upon the mounting ferocity of artillery fire, as cannon balls plowed the ground, shells hurled their lethal splinters, and "grape shot" rattled off buildings and screamed overhead.[4]

Troop numbers also increased in the course of the French Revolutionary and Napoleonic Wars. Assailed by a coalition of Great Powers in 1793, the French Jacobins had decreed universal conscription as a last resort to raise sufficient men to fend off the combined armies of Austria, Prussia, England, Holland, Spain, and Piedmont.[5] Napoleon took this ready-built system and used it to man and replenish his own "Grand Army" from 1804 until his downfall in 1815.[6] Initially reluctant to adopt the French system, which entailed arming large numbers of untrained, politically unreliable men, rival armies were forced by attrition to embrace all or parts of it. Thus, in 1814 the Prussians introduced universal conscription and the Austrians created a *Landwehr* or reserve army of national guards.[7]

Bigger armies needed new tactics, for the old ones had been devised for small, professional armies, which had devoted years to the perfection of complex linear formations. Confronted with droves of green recruits and advancing enemies on every frontier, the generals of the French Revolution – Napoleon included – had hit upon an ingenious solution: columnar tactics. Whenever an enemy regiment

2 Hew Strachan, *European Armies and the Conduct of War* (London: Allen and Unwin, 1983), pp. 8–22, 32–3, 55, 111.
3 Van Creveld, *Technology*, pp. 94–6. Strachan, *European Armies*, pp. 51–2.
4 Carl von Clausewitz, *On War*, trans. J. J. Graham, ed. Anatol Rapaport (1832; New York: Penguin, 1985), 1/iv, "Of Danger in War," pp. 158–60.
5 Strachan, *European Armies*, pp. 39–40.
6 Larry H. Addington, *The Patterns of War since the Eighteenth Century* (Bloomington: Indiana University Press, 1984), pp. 21–7.
7 Hajo Holborn, "The Prusso-German School: Moltke and the Rise of the General Staff," in Peter Paret, ed., *Makers of Modern Strategy* (1943; Princeton: Princeton University Press, 1986), p. 282. Strachan, *European Armies*, pp. 56–8.

deployed in line and prepared to fire, a French attack column would sprint at it with the bayonet. The astonished line infantry, armed with muzzle-loading muskets, would be lucky to get off one or two volleys before the "shock columns" of howling French peasants and *sans-culottes* burst through their midst, wrecking their formation and trampling the old regime musketeers underfoot.[8]

The first triumph of these new French "shock tactics" was Valmy in 1792, when a rapidly assembled army of French conscripts advancing behind a heavy cannonade put an army of Prussian professionals to rout. Rough and dirty though the French tactics were, the Prussians, Austrians, and Russians could not afford to ignore them. Indeed, only British infantry proved bold and skillful enough to "hold the line" against French columnar assaults. After Valmy, all other powers gradually adopted shock tactics, which would remain the standard Continental tactic until 1866.

Backed by his mass armies, which initially made up with zeal what they lacked in experience, Napoleon committed ever larger forces to battle. After 1800, Bonaparte regularly campaigned with 100,000 men or more and tended to ignore enemy fortresses that appeared on his flanks. Thrusting impatiently past these eighteenth-century relics, he dared their small garrisons to sally against his big armies. This emphasis on mass, speed, and mobility was yet another of Napoleon's innovations. If an unsubdued fortress blocked a march route or interrupted French lines of supply, Napoleon rarely wasted time besieging the obstacle, but improvised instead, lurching round the fort and making up any deficit in supplies by requisitioning at the expense of local populations.

Swollen with fresh-faced drafts and fed by an eighteenth-century agricultural revolution that introduced the potato and more bountiful crop yields, armies grew and grew in the early 1800s, becoming so large that, in 1805, Napoleon was compelled finally to slice them into manageable, self-sufficient pieces the size of seventeenth-century armies. These were the first army "corps." They were, in turn, subdivided into two or three all-arms "divisions," each comprising twelve infantry battalions, five cavalry squadrons, and thirty-two guns.[9] This decentralization of command and logistics permitted Bonaparte to build even *bigger* armies. In 1812, he marched to Moscow with 600,000 men. One year later, he engaged 300,000 Allied troops with 130,000 of his own at Leipzig. This so-called battle of the nations would stand as the biggest battle of all time until 1866, when 450,000 Austrians and Prussians bestrode the field at Königgrätz.[10]

The growth of armies and the attendant devolution of command from army to corps to division to brigade accentuated as never before the function of the

8 Gunther E. Rothenberg, *The Art of Warfare in the Age of Napoleon* (Bloomington: Indiana University Press, 1978), pp. 98–102, 114–18.
9 Strachan, *European Armies*, pp. 40–4. Cyril Falls, *The Art of War* (London: Oxford University Press, 1961), pp. 30–4.
10 Vincennes, Archive de l'Armée de Terre (AAT), 7N848, Gaston Bodart, "Die Stärkeverhältnisse in den bedeutesten Schlachten." Craig, *The Battle of Königgrätz*, p. x.

professional general staff. Once despised by their regimental colleagues as mere mappers and theorists, staff officers of the Napoleonic era, like Bonaparte's Berthier and Schwarzenberg's Radetzky, became the very glue of modern armies. By plotting lines of operation and supply they contributed decisively to a campaign's outcome by moving troops efficiently to a theater of war.[11] If line troops arrived on their battlefield fit and well fed after a sequence of reasonable, well-supplied marches, then it was fair to say that the general staff had taken the first, essential step to victory and conferred an inestimable advantage on its field commanders.

In terms of actual fighting, general staffs were no less important, for troop movements became more complex as crowds of unruly infantrymen, cavalry mounts, field guns, and ammunition wagons were crammed into growing armies, extending the frontage of the average European corps in the first decade of the nineteenth century from 1.2 to 2.5 kilometers. As a result of this more than twofold growth, the *time* needed for a Napoleonic corps to deploy for battle also more than doubled, from two to five hours, as frantic staff officers toiled to separate an army's guns and reloads from its infantry, cavalry, and food stocks and to make contact with neighboring units. It was a difficult task, usually completed under fire amid confusion, and it required cool heads and rigorous organization from the initial mobilization until the decisive battle.[12]

These major organizational changes carried strategic ones in their train. By 1815, with new, better-managed regiments advancing along the hundreds of new roads that had been laid down as a part of Europe's modernization under Napoleon, it was fair to say that the old eighteenth-century practice of fighting from fortress to fortress for control of the intervening turnpikes and waterways was obsolete. Troops parked inside the old forts were easily contained by enemy "observation corps" and kept from joining decisive battles beyond their walls. Generals who hewed too closely to eighteenth-century rules of war in the nineteenth century found themselves outnumbered and vulnerable in the field.[13] Thus Clausewitz's *On War* recommended a strategy of "unbridled violence" for the new century.[14] Clausewitz was for restless offensives aimed not at an enemy's forts or capital but at his *army*, which, once destroyed, would compel the surrender of the enemy state.[15] *On War*, which, significantly, was a Prussian production, discarded all the old truths of the eighteenth century – especially the belief in the efficacy of defensive fortifications and limited war aims – and presaged a new era of war on a

11 Strachan, *European Armies*, p. 53.
12 Wolfgang von Groote, "Moltkes Planungen für den Feldzug in Böhmen und ihre Grundlagen," in Wolfgang von Groote and Ursula von Gersdorff, eds., *Entscheidung 1866* (Stuttgart: Deutsche Verlags-Anstalt, 1966), p. 90.
13 Helmuth von Moltke, *Moltke on the Art of War*, ed. Daniel J. Hughes (Novato: Presidio, 1993), pp. 22–35. Strachan, *European Armies*, pp. 34–5.
14 Strachan, *European Armies*, pp. 92–6.
15 Clausewitz, *On War*, 4/v, "The Significance of Combat," pp. 316–18.

grand scale, where whole populations would be mobilized and politics and war would mingle with dangerous implications for Europe's ancient dynasties.[16]

In 1848, a revolution toppled the throne of France and nearly overthrew the monarchs of Austria and Prussia. Even the most reactionary European generals and statesmen, some of whom had taken Clausewitz for a rabble-rouser bent on arming the masses, awoke to the fact that armies like politicians had to move with the times.[17] Symbolic of this realization was the fact that France's new Republican government had crushed a Socialist insurrection in Paris in June 1848 not with local garrison troops – many of whom had fraternized with insurgent workers – but with French national guards trucked in from the provinces in record time on steam trains.[18] Just as road-building and improved crop yields had aided the first Napoleon in his campaigns at the turn of the century, a new Napoleon at mid-century would be able to exploit the military potential of two new innovations: the railway, which permitted rapid movement, and the electric telegraph, which, for the first time, permitted instant communication across vast spaces.

Shunted by railroads and coordinated by telegraphs, Europe's armies resumed their growth after 1848, this time aided by deadly new developments in weapons technology. In the 1840s and 1850s, most European armies discarded their smoothbore muskets and rearmed with rifled ones, which extended the range of an infantryman from 120 to 1,200 meters. The French and the British, followed by the Austrians, Prussians, Italians, and Americans, applied rifle technology to their artillery, which pushed maximum gun ranges out from 1,000 meters in 1848 to 7,000 in 1859, raining chaos and death far behind enemy lines.[19] Asked by his company captain at Shiloh in 1862 why he did not make for the safety of the rear, a wounded Union soldier pointed to shells screaming overhead and replied: "Because, cap'n, this battle ain't got no *rear*."

In the Crimean War, fought from 1854–6, 600,000 French, British, Turkish, and Piedmontese troops were mobilized to fight 600,000 Russians. The British were armed for the first time with rifles, with which they inflicted horrible casualties on the Russians. Although contemporaries ridiculed the Russians for their inability to drive the Allies off their remote Black Sea beachheads, they were in no doubt as to the reason why. The Russians were still armed with a musket, still formed in Napoleonic shock columns, and still marching on foot. Tsar Nicholas I had never built a railway to connect his depots in Moscow and St. Petersburg with his Crimean ports, which meant that Russian reinforcements and

16 Michael Howard, *War in European History* (Oxford: Oxford University Press, 1976), pp. 94–7.
17 Strachan, *European Armies*, pp. 69–70.
18 And in Baden in 1849, a Prussian counterrevolutionary army had been unable to come to grips with a Badenese revolutionary one, which had skipped backward out of reach on the railway each time the Prussians attempted to engage. Dennis E. Showalter, *Railroads and Rifles* (Hamden: Archon, 1975), pp. 36–7.
19 Vincennes, AAT, MR 845, Paris, January 1862, Maj. Auguste Châtelain, "Etudes historiques et militaires sur la guerre d'Italie en 1859."

supplies never arrived in sufficient quantity to defeat the French and British, who ended up winning the Crimean War almost by default in 1856.[20]

In 1859, the world witnessed its first great railroad mobilization, as French Emperor Napoleon III, a nephew of the great Napoleon, transported 130,000 troops – half his total strength – to Italy by rail. In June, 300,000 French, Piedmontese, and Austrians clashed at Solferino in Lombardy, a battle that exhibited all the problems modern European armies were experiencing as they struggled to adopt new arms, tactics, and organizational methods. The French army of 270,000 gained the Po basin only after what one commentator called a "Xerxes march" to Milan, a straggling caravan of mixed-up arms and supplies that was able to form for battle only because of the no less sluggish approach of Austria's five corps, one of which proved so muddled that it was able to cover no more than three miles a day in the critical weeks before Solferino.[21]

Three inconclusive battles were fought before Solferino – at Montebello, Palestro, and Magenta – and the Austrians fumbled away good chances in all three. This was due in large part to the ineptitude of Austria's infantry, which had only just rearmed with a rifle and had no idea how to use it to good effect. Thus, though armed with older rifles technically inferior to Austria's new ones, the French were able to rout the Austrians employing the shock tactics of the last century. Some Austrian battalions literally dissolved before French bayonet charges, as panic-stricken Habsburg troops tried to load, aim, and fire rifles that, in many instances, were still slick with factory grease.[22] At Palestro, where French and Austrian troops battled for control of the Sesia river bridges, foreign observers marveled that many units actually fought with their bare hands, as columns of French infantry crashed into lines of bewildered Austrian riflemen, who solved the technical problem posed by their relatively sophisticated rifles by casting them away and fighting with their fists.[23]

In 1859, Austrian tactics – revised by Field Marshal Joseph Radetzky in 1849 to take full advantage of the monarchy's new "precision rifle" – had proven too complicated for Austria's largely Slavic, uneducated peasant conscripts. Although there were nine different "languages of instruction" for peace-

20 Strachan, *European Armies*, pp. 72–3.
21 Vincennes, AAT, MR 845, Anon., "Précis historique de la campagne d'Italie en 1859." Wolf Schneider von Arno, "Der österreichisch-ungarische Generalstab," (Kriegsarchiv Manuscript), vol. 7, pp. 18, 54–5. Michael Howard, *The Franco-Prussian War* (1961; London: Granada, 1979), p. 23.
22 Helmuth von Moltke, "Der italienische Feldzug des Jahres 1859," *Moltkes kriegsgeschichtlichen Arbeiten*, ed. grosser Generalstab, 3 vols. (Berlin: Mittler, 1904), vol. 3/2, pp. 114-15. Eduard Bartels, *Der Krieg im Jahre 1859* (Bamberg: Buchner Verlag, 1894), pp. 6–8. k.k. Generalstab, *Der Krieg in Italien 1859*, 3 vols. (Vienna: Druckerei des Generalstabs, 1872), vol. 1, pp. 411 and 438.
23 Vincennes, AAT, MR 845, Paris, January 1862, Maj. Auguste Châtelain, "Etudes historiques et militaires sur la guerre d'Italie en 1859." Col. Charles Ardant du Picq, *Battle Studies*, trans. J. Greely (1880; New York: Macmillan, 1921), pp. 268-70.

time use in the polyglot Austrian army – languages like Czech, Serbo-Croatian, Hungarian, Rumanian, and Italian – in battle the army employed just one: German. Conceive, then, the terror that engulfed Austria's non-German troops of the line as French storm columns converged on them while their German-speaking officers bellowed orders in what was, for most, an unfamiliar tongue. One Austrian officer later noted that at Solferino his company of Slavs had been unable to comprehend even the command "*Halt*."[24] Thus France and Piedmont triumphed in 1859, due in large measure to Austrian fumbling with a new rifle, new tactics, and horribly mismanaged lines of supply. So wretched had been the Austrian war effort that, after Solferino, Emperor Franz Joseph, who served for the first and last time in his long reign as commander in the field, took the unusual step of suing for an immediate peace rather than retiring over the Mincio river to continue the war from Austria's formidable Quadrilateral fortress group in Venetia.

Franz Joseph capitulated in July 1859 and agreed to cede the rich Habsburg province of Lombardy to Piedmont, a French client and a budding Great Power. In his Laxenburg Manifesto – drafted to explain the Austrian fiasco to a disbelieving public – Franz Joseph blasted Austria's principal ally in the German Confederation, Prussia, for failing to aid Austria in the conflict. Yet the sad fact was that the Prussians had *tried* to help but, like the Austrians, had been derailed by logistics, which had slowed Prussia's mobilization on the Rhine to a crawl and convinced the Prussian regent, Crown Prince Wilhelm, of the need to entrust reforms of Prussia's army to its two most most able administrators, Generals Helmuth von Moltke and Albrecht von Roon.[25]

The French, although victorious, suffered horribly in the campaign. With just one ambulance per regiment of 3,000 men, most French wounded were abandoned to the heat and vultures. Food was always in short supply; most French troops subsisted on coffee and cold gobs of *vercelli*, starvation rations that produced a debilitating flow of men to the army's sick bays. France's shock tactics, though acclaimed for their audacity, were often nothing more than a desperate tactical correction to the army's strategic floundering. At Magenta, for example, French troop commanders stormed ahead all along the line because Napoleon III had issued conflicting orders – one set made his left the "turning wing" the other, the right. The predictable result was a deadlock, as French attack columns battered for hours against Austria's *front* and broke through only at the cost of heavy, avoidable casualties.[26] In sum, on all sides, the Italian War of 1859 furnished further proof of the need for modern armies to streamline their organizations, accelerate their deployments, and improve the tactical performance of their

24 D. N., "Über die Truppensprachen unserer Armee," *Österreichische Militärische Zeitschrift* (ÖMZ) 2 (1862), pp. 365–7.
25 Showalter, *Railroads and Rifles*, pp. 44–8.
26 Vincennes, AAT, MR 845, Paris, January 1862, Maj. Châtelain, "Bataille de Magenta."

troops.[27] Victory in the next war would almost certainly go to the army that grasped the lessons of this one.

PRUSSIAN STRATEGIC AND OPERATIONAL DOCTRINE, FROM CLAUSEWITZ TO MOLTKE

Prussia's regent, Crown Prince Wilhelm, ascended to the throne in 1861 upon the death of his elder brother. The new king, Wilhelm I, though not noted for his sagacity, had the good sense to employ brilliant advisors, foremost among them Count Otto von Bismarck at the foreign ministry, Moltke at the General Staff, and Roon at the ministry of war. In just seven years, Moltke and Roon would not only grasp but *institutionalize* the lessons of 1859, a task they completed in time for the war of 1866, which would pit a thoroughly professional Prussian army against a scarcely reformed Austrian version of the force that had fallen to the French at Solferino.

Born in Mecklenburg in 1800 and educated at Berlin's *Kriegsakademie*, Moltke took Clausewitz's offensive precepts and, in the decade between his promotion to Prussian staff chief in 1858 and Prussia's war with Austria in 1866, worked them into hard-hitting war plans, which he successfully communicated to most of the Prussian officer corps.[28] Convinced of the urgent need to reform Prussia's military establishment after the technical and military embarrassments of the 1830s, 1840s, and 1850s, when the Prussian army had stumbled through its deployments and snared itself in its own limited operations against a Polish insurrection and minor revolutions in Baden and Hessia, Moltke first expanded the Prussian regular army, then revolutionized its strategic, operational, and tactical doctrines in the years between 1862 and 1866.

Throughout his long career, Moltke was driven by the fear, shared by Bismarck, that Prussia could all too easily be overrun by any of its larger neighbors. In the reign of Frederick the Great (1740–86), Voltaire had dismissed Prussia as a mere "kingdom of border strips," for its eastern heartland – Brandenburg and Prussia – was riven from its western enclaves in Westphalia and the Rhineland by the north German free cities and the princely states of Saxony, Hanover, and Hessia. In the south, Prussian Silesia and Lusatia, prized for their textile mills and coal mines, overlapped the Austrian Empire and its Saxon ally. In the east, Prussia was flanked by the Russian Empire's Baltic and Polish provinces. In the west, it was bounded by France. In short, of all the European Great Powers, Prussia was the most vulnerable to invasion, and the expansion of railroads and telegraphs in the 1840s only accentuated this vulnerability. In 1859, Berlin's efforts to win a reprieve for its Austrian ally in Lombardy by threatening Napoleon III with a Rhine mobilization had been met with the cool French assurance

27 Howard, *Franco-Prussian War*, pp. 17–18.
28 Strachan, *European Armies*, pp. 98–9.

1. General Helmuth von Moltke (1800–91), Prussian General Staff chief in 1866

that since France's railways could muster 200,000 men to the Rhine in a matter of *days*, the Prussians, who would require weeks, ought perhaps to desist with their threats, which they had.[29]

Such embarrassments had been the stuff of Prussian army life in the 1850s, a decade that had begun for Berlin with what Bismarck called the "humiliation of

29 Showalter, *Railroads and Rifles*, p. 48.

Olmütz," a crushing diplomatic setback occasioned by the army's failure to deploy in time to defend Prussia against a threatened Austrian invasion from Bohemia in November 1850. With an Austrian army on their frontiers, Prussian negotiators at the Austrian town of Olmütz had been forced to drop Hohenzollern plans to dissolve the Habsburg-run German Confederation of 1815 and reorganize north Germany under Prussian hegemony. Ridiculed for the climb-down, Prussia's generals protested that they had no choice, for Prussia's march routes, telegraph roads, and railways were everywhere interrupted and flanked by Austria and its German Confederate allies.

This precarious strategic situation accounted for Prussia's timid approach to international affairs in the first half of the nineteenth century. Rather than challenge Austria's control of the thirty-nine state German Confederation, a privilege that had been granted Austria by all the European Great Powers at the Congress of Vienna in 1815, the Prussians had loyally maintained the treaties of 1815 and generally collaborated with the Austrians to uphold a European "balance of power" that was premised upon Habsburg supremacy in Germany and Italy. Thus, Austro-Prussian cooperation was taken for granted in the Polish crisis of 1831, in the revolutions of 1848, throughout the Crimean War, and even as late as the Franco-Austrian War of 1859, when the Prussian king had refused Bismarck's suggestion that he take advantage of Austria's defeat at Solferino to dissolve the German Confederation, link up the scattered provinces of Prussia, and push the Protestant kingdom's frontiers deep into Germany's Catholic south.[30]

Prussian military doctrine had long mirrored this political conservatism, which explained the army's capitulation to Austrian threats in 1850 as well as King Wilhelm's decision to replace Prussia's unimaginative old guard with daring new reformers in the late 1850s.[31] Upon assuming the post of Prussian General Staff chief in 1858, General Moltke immediately remarked that whereas a vast Continental power like Russia or Austria could absorb a whole series of defeats while retiring on its interior, Prussia, that "kingdom of border strips," would not be so fortunate. Its flat, sandy plains offered few obstacles to an invader, and Berlin, with its carefully husbanded treasury, its vital rail terminals, and its efficient ministries, had no natural features to defend it against a determined enemy, who, like Napoleon in 1806, would be able to dash across the entire kingdom in a matter of days.[32]

Moltke understood that the only way for Prussia to break from its dependency on Austria and its subordination to England, France, and Russia, was to make Prussia what it had briefly been under Frederick the Great: the premier military

30 Otto Pflanze, *Bismarck and the Development of Germany*, 3 vols. (1963; Princeton: Princeton University Press, 1990), vol. 1, p. 136. Lothar Gall, *Bismarck*, trans. J. A. Underwood, 2 vols. (Frankfurt 1980; London: Allen and Unwin, 1986), vol. 1, pp. 98–9.

31 Gall, *Bismarck*, vol. 1, pp. 73–7. Showalter, *Railroads and Rifles*, pp. 37–8.

32 *Moltke on the Art of War*, ed. Daniel J. Hughes, pp. 102–7.

state of Europe. To do this, Moltke hurried to implement strategic and tactical changes that rival powers were only slowly adopting. It was the English historian A. J. P. Taylor who described the rise of barren Prussia as "a triumph of man over nature," and this was no less true of Moltke's strategic conceptions after 1857.[33] Like Frederick the Great, Moltke sought to overcome Prussia's geographical weakness by mobilizing more quickly than his enemies, then launching his army into enemy territory to deflect and destroy hostile forces aimed at Berlin.[34]

This, again, was pure Clausewitz, but it was accomplished thanks to momentous reforms conceived and enacted by Moltke and Roon. In the years between 1859 and 1866, these two men staked their careers in a bitter fight with Prussia's Liberal-controlled parliament waged to bring the Prussian regular army up to the strength of its Austrian rival and to subject Prussia's notoriously easygoing *Landwehr*, the kingdom's middle-class national guard, to strict royal supervision. With the help of Bismarck, a domineering *Junker* whom the Prussian king appointed minister-president in 1862 to ram these controversial army reforms through parliament, Moltke and Roon were able to add fifty regiments to Prussia's army and triple its effective wartime strength, from 100,000 bayonets in 1859 to 300,000 in 1866. They also succeeded in developing for Prussia the most efficient, rapidly deployable army of any European power. Whereas the French, Austrians, and Russians still practiced "extraterritoriality," posting regiments not in their home districts but far away in order to make the army a "school of the nation," Moltke and Roon devised a territorial system of army corps that could be increased to war strength locally, then mobilized and deployed in a fraction of the time required by Prussia's rivals.[35] This enlarged, uniquely efficient army would enable Prussia, which disposed just half the population of the Austrian Empire in 1866, to risk war with its much more populous neighbor.

To ensure the professionalism of their enlarged army, Moltke and Roon sheared the army's *Landwehr* battalions away from its regular regiments and assigned them easy tasks like fortress duty and the defense of depots and supply lines. Although this raised another storm of protest from Prussia's Liberals, who wanted *Landwehr* units mixed with regular ones in order to dilute the *Junker* aristocracy's control of the royal army, Roon, Moltke, and Bismarck simply ignored parliament's annual vetoes of army bills and *forced* their changes through in time for 1866, giving Prussia the steep increase in troop numbers it would need to beat Austria and its principal German federal allies: Bavaria, Württemberg, Saxony, and Hanover.

33 A. J. P. Taylor, *The Course of German History* (New York: Capricorn, 1946), pp. 27–30.
34 Groote, "Moltkes Planungen," in *Entscheidung 1866*, pp. 78–81.
35 Hajo Holborn, "The Prusso-German School," in *Makers of Modern Strategy*, pp. 286–7. William Carr, *The Origins of the Wars of German Unification* (London: Longman, 1991), pp. 49–53. Gerhard Ritter, *The Sword and the Scepter*, trans. Heinz Norden, 4 vols. (Munich 1954–68), vol. 1, *The Prussian Tradition, 1740–1890*, pp. 121f.

While Bismarck battled Prussia's parliament on the *Landwehr* question, Moltke and Roon quietly brought Prussia's railways and telegraphs under state control and adapted them for military use. Railroad wagons were equipped with detachable benches so that seats could be removed and soldiers crammed inside in the event of mobilization, and freight cars were fitted with rings and breakaway partitions to accomodate cavalry horses and gun carriages. Lines were expanded and, in some cases, double-tracked to permit movement in two directions along the same railway. Lines that bypassed fortresses or regimental depots were equipped with extra sidings and prepared for military use, and telegraph cables were strung over the rails to ensure that army orders arrived in time to meet speeding trains.[36]

In 1864, Austria, Prussia, and the German states declared war on Denmark in order to free the provinces of Schleswig and Holstein from Danish rule and incorporate them into the German Confederation. This Danish War, which lasted a year, convinced Moltke of the need to hurry the integration of railroads into Prussian military planning. The Austro-Prussian force sent to Denmark to liberate Schleswig-Holstein traveled by rail, which spared the men much fatigue and landed them in the theater of operations in time for a spring 1864 offensive.[37]

Once mobilized and deployed in Denmark, Moltke came to appreciate the combat function of railroads no less than their logistical one. Instead of maneuvering, the Danes had fought the war with Austria and Prussia from a series of trench works, first from the Dannevirke in Schleswig, then from the royal forts at Fredericia and Dybbøl. In these places the Danes had concentrated and entrenched their guns and rifles, inflicting heavy casualties on Austrian and Prussian attackers. Witnessing first hand the range and destructiveness of rifled weapons, Moltke resolved in future to maneuver around fortifications, using railroads to move and concentrate his armies quickly. Railroads were essential to such operations because the range and accuracy of rifled guns and the continued growth of modern armies tended to make flank attacks and envelopments *strategic* rather than purely operational or tactical tasks. Now that a cannon could hurl a shell seven kilometers and an infantry rifle could bring a man down at 1,000 paces, it would be difficult to redirect a regiment from an enemy's center to his flank in the heat of battle. In the 1860s, such a classically Napoleonic maneuver would have resulted in prohibitive casualties.[38]

Moltke also recognized that since the Prussian army of the 1860s was three times larger than the Prussian army of the 1850s – 300,000 versus 100,000 men – it would be impossible to move it efficiently if it were deployed *en masse*.

36 Showalter, *Railroads and Rifles*, pp. 38–46. *Moltke on the Art of War*, ed. Daniel J. Hughes, pp. 107–21. Van Creveld, *Technology*, pp. 153–9.
37 Vincennes, AAT, MR 60/1470, Copenhagen, May 7, 1864, Lt-Col. Février to Marshal Randon. Bucholz, *Moltke, Schlieffen*, pp. 43–4.
38 Rothenberg, "Moltke, Schlieffen, and the Doctrine of Strategic Envelopment," pp. 299–300.

That had been just one of the many lessons taught by Solferino in 1859, when the Austrians had tried and failed to deploy more than a fraction of their densely packed army of 150,000 in the Mincio hills.[39] Armies of 100,000 or more had posed logistical problems even for Bonaparte, for a single corps of 30,000 men required fifty kilometers of open road to accomodate its march columns and trains. If infantry corps, cavalry divisions, artillery regiments, and supply wagons were simply stacked up one behind the other, most of the army would never see battle. Recognizing all this, Moltke resolved to use the mobility and speed afforded by Germany's excellent road, rail, and telegraph nets to move his armies separately to their jumping-off stations, where they would then hasten along uncluttered march routes to the point of attack, joining themselves wing-to-wing *in battle*, when a decisive result was in sight.[40]

For most of the world's military establishment, this Moltkean doctrine seemed heretical, for in the 1860s old soldiers still hewed to the precepts of Antoine Henri Jomini. Jomini, who had campaigned with Napoleon and then summarized his experiences in *Précis de l'art de la guerre* published in 1838, insisted that the secret of Bonaparte's success had been his "strategy of the central position," his tendency to mass troops on the "internal lines" *between* converging enemy armies to beat them separately. With the Napoleonic examples of Lodi, Marengo, and Austerlitz in mind, Jomini postulated that "simple and interior lines enable a general to bring into action . . . upon the important point a stronger force than the enemy." He cautioned nineteenth-century generals against repeating the errors of Napoleon's adversaries, who, too often, had failed to *concentrate* their coalition armies and thereby allowed themselves to be isolated and overwhelmed, one after the other, by Napoleon's massed columns.[41]

What Moltke perceived, however, was that the nineteenth century's ever growing numbers, weight and bulk of soldiers, guns, and material tended to clog Napoleon's "internal lines" and make rapid movement along them impossible. Indeed, Moltke, who insisted that "the *normal* state of an army is its separation into corps," took as his inspiration Bonaparte's famous victory at Ulm in 1805. There the French emperor – his army spread across a front of 200 kilometers – had converged quickly upon a slow-moving Austrian army massed on the Danube and had strangled it.[42] The example of Ulm must have symbolized for Moltke the many contradictions contained in Jomini's *Précis*. Had not Napoleon created the marshalate and the corps system to facilitate the *dispersal* of armies, which would permit them to march more quickly? And did not the examples of Ulm and Jena

39 Edward Bruce Hamley, *The Operations of War* (Edinburgh and London: Wm. Blackwood, 1866), pp. 364, 395.
40 Hajo Holborn, "The Prusso-German School," in *Makers of Modern Strategy*, p. 287.
41 "An undue number of lines divides the forces, and permits fractions to be overwhelmed by the enemy." Strachan, *European Armies*, pp. 44–6, 60–4. Howard, *War in European History*, p. 83.
42 Hajo Holborn, "The Prusso-German School," in *Makers of Modern Strategy*, p. 287. Strachan, *European Armies*, pp. 43–4, 64, 99.

suggest that armies massed in concentrated positions could easily be enveloped by dispersed, well-coordinated flanking armies?[43]

Moltke – like his American contemporary, Ulysses S. Grant, who never read Jomini and scorned "fixed laws of war" – appreciated that the intangible elements of surprise and flexibility had been far more vital to Napoleon's success than Jominian principles.[44] Moltke would make these elements instrumental in his own success by harnessing the railroad and the electric telegraph to make the rapid, *prolonged* movement and concentration of dispersed units possible. This distinguished Moltke from Napoleon, who, occupied as he usually was shuttling between two enemy armies, rarely found the resources to pursue and *destroy* either of them. In the post-Napoleonic period, Moltke felt certain that he could use the railway and the telegraph to mount unprecedentedly *wide* envelopments that would sweep the entire enemy front line and reserve into their jaws.[45]

Moltke also predicted the disappearance of charismatic captains like Bonaparte. The growth of armies, Moltke discovered, necessitated a devolution of command from headquarters to officers at the front. Headquarters, Moltke believed, had no business other than to deploy a field army wisely and direct it to its strategic objectives, where field commanders would plan and fight its battles to their conclusion. Later this Moltkean concept would be enshrined as "*Auftragstaktik*," the Prusso-German practice, born in 1866, of limiting instructions to subordinates to a description of an army's ultimate objectives, leaving junior officers considerable tactical freedom for their attainment.[46] Though Moltke's prescriptions made perfect sense, they seemed to be the very antithesis of Napoleonic practice, which had landed sledgehammer blows with massed armies under the watchful eyes of the emperor himself.

Though Moltke's views were controversial, Prussia's King Wilhelm I believed in his staff chief and helped clear away obstacles to change put up by Prussia's high-ranking veterans of the wars with Napoleon. These influential "old sweats," officers like Field Marshal Friedrich von Wrangel and General Eduard Vogel von Falckenstein, submitted reluctantly to Moltke's reforms, and only just in time for a conflict with Austria that arose from the question of how to divide and administer the duchies of Schleswig and Holstein, which Prussia and Austria had jointly detached from the Kingdom of Denmark in 1864.[47] In 1865, Moltke and Roon began planning in earnest for a war with the Austrian Empire for control of the two disputed "Elbe Duchies." In the pending conflict, Austria would enjoy several advantages. The Habsburg province of Bohemia formed a salient that thrust northward into Prussia's hostile neighbor Saxony, which, assuming an

43 John Shy, "Jomini," in *Makers of Modern Strategy*, pp. 174–6.
44 Strachan, *European Armies*, pp. 73, 99.
45 Strachan, *European Armies*, pp. 46, 99.
46 *Moltke on the Art of War*, ed. Daniel J. Hughes, pp. 156–7. Strachan, *European Armies*, pp. 98–9.
47 Wilhelm Ritter von Gründorf von Zebegény, *Mémoiren eines österreichischen Generalstäblers, 1832–66*, 2 vols. (Stuttgart: Verlag Robert Lutz, 1913), vol. 2, p. 198.

Austro-Saxon alliance, would permit the Austrians to deploy just three days' march from Berlin. Any Prussian attempt to flank such an Austrian deployment from Upper Silesia would have been hindered by the physical barrier formed by Bohemia's Giant Mountains. Prussian march columns small enough to pass through the half dozen passes connecting Prussia and Austria could have been easily overpowered by the concentrated Austrian army in Bohemia.[48]

Despite these formidable obstacles to a Prussian invasion of Austria, Moltke decided in 1866 to risk one anyway. Over the opposition of Prussia's eldest generals – and old Jomini himself, who, from his study in Paris, recommended a defensive Prussian concentration in Silesia – Moltke opted for an offensive.[49] Prussia's last great expansionist, Frederick the Great, had never failed to beat the notoriously slow-moving Austrians through the mountains, and Moltke reasoned that Prussia's six railroads to the Austrian frontier would give him as much as a six weeks' head start against the Austrians, who would have to rely on foot marches and a single railway – the *Nordbahn* – to convey troops and war material from Vienna to the Prussian border. Moltke understood that so long as he were left with the strategic initiative in the war, with full powers to initiate mobilization and thus beat Austria "to the draw," he would have ample time to overrun Saxony, seize its vital north-south railways, and pass through the Giant Mountains and into Bohemia, the granary and industrial core of the Austrian Empire.

To implement this daring plan, Moltke would have to move swiftly, to prevent the Austrians from completing their own mobilization and deployment, and to block cooperation between the Austrian army and its German federal allies – Bavaria, Württemberg, Baden, Saxony, Hanover, and Hessia – who, collectively, could furnish the Austrians with an additional 150,000 bayonets.[50] In a memorandum prepared in the winter of 1865–6, Moltke insisted that in any war with Austria and its German cohorts, Prussia's "first day of mobilization must coincide with the declaration of war . . . and as soon as one of our neighbors begins to arm, we must declare war and announce mobilization simultaneously, for in no case can we permit ourselves to lose the initiative."[51] Moltke, in short, pinned his hopes on a *Blitzkrieg*, a lightning strike into Austria and the German states by fast-moving Prussian columns that would seize the Habsburg army and the federal contingents in the midst of their deployments, swarm round their flanks, and crush them. Moltke later called this process of strategic envelopment, begun weeks before a battle by mobilization on an extended front, the "*Kesselschlacht*" or "pocket battle." Enemy forces would be driven into a narrow "pocket" by the broadcast wings of the Prussian army and annihilated.

48 Groote, "Moltkes Planungen," in *Entscheidung 1866*, pp. 78–83. Showalter, *Railroads and Rifles*, pp. 52–6.

49 Strachan, *European Armies*, p. 99.

50 Vienna, Kriegsarchiv (KA), Militärkanzlei Seiner Majestät (MKSM) 1866, Karton 342, 69–8, Vienna, May 1866, k.k. Generalstab, "Kriegsstärke des VII. und VIII. Bundes-Armee Korps und des sächsischen Contingents."

51 Craig, *Königgrätz*, pp. 27–9.

Tactics would be instrumental in the execution of a Prussian *Kesselschlacht*. To engulf a nineteenth-century army of 300,000, Moltke would have to approach it on a precariously broad front, with his own *corps d'armée* stretched thin. In the days before the intended pocket battle, while the Prussian center attempted to pin the enemy army in a pocket, where the wings could settle around it and sever its lines of retreat, those central Prussian units would be exposed to potentially devastating counterattacks by the entire enemy force. With their wings splayed, the Prussians would be unable to reinforce their weakened center in depth.

This danger of an enemy breakthrough accounted for the preference most nineteenth-century commanders had for Jominian strategy. Safety, it seemed, was to be had in troop numbers and mass, in closed order and prepared positions. Moltke, however, saw a way around this dilemma. By exploiting modern firepower and improving the tactical performance of the Prussian soldier, he would enable the Prussian infantryman to cut his way *tactically* through even the most unfavorable *strategic* obstacles to reach Moltke's ultimate goal: the narrow *Kessel* or pocket, where overwhelming Prussian numbers could be wrapped around the densely arrayed enemy army to destroy it with their fire.[52] In the Prussian General Staff's history of the Austro-Prussian War published in 1867, Moltke would summarize his views on the matter: "An army hit in front and flank finds that its *strategic* advantage of internal lines has been beaten *tactically*."[53]

Moltke's resolve to make the Prussian infantryman the best and most resourceful in Europe was aided by the coincidence that, in 1866, Prussia was the only European Great Power armed with a breech-loading rifle, the Dreyse *Zündnadelgewehr*, or needle rifle, so-called because of its needle-shaped firing pin. Although the bolt-action needle rifle could be loaded and fired four times more quickly than the muzzle-loading rifles used by other European armies, none of Prussia's rivals adopted the Dreyse rifle after it was introduced in 1849. This curious fact was attributable to flaws in the Prussian rifle that made it suspect in the eyes of foreign powers. It was crudely constructed, with a fragile firing pin, a stiff bolt action that had sometimes to be hammered open with a rock, and a leaky breech that blasted sparks into the faces of its own handlers. This defective gas seal, which was the basic defect of all early breech-loaders, also dissipated much of the rifle's blast and velocity, making long-range Prussian fire, in the no doubt exaggerated judgement of an Austrian medical expert, "scarcely more hazardous than a handful of pebbles."[54] As for the rifle's rapid rate of fire, this too was perceived by most European officers to be a flaw, not a strength, for in

52 London, Public Record Office (PRO), Foreign Office (FO) 120/907, Vienna, December 8, 1913, Maj. Cuninghame to Bunsen.

53 Grosser Generalstab, *Der Feldzug von 1866 in Deutschland* (Berlin: Ernst Mittler, 1867), p. 99.

54 "Über die Misserfolge bei der österreichischen Nordarmee," *ÖMZ* 2 (1866), pp. 353–4. Craig, *Königgrätz*, pp. 20–1.

all but the coolest hands, such a rifle would be fired *too* quickly, exhausting ammunition stocks with skirmishing, before a battle was fully joined.[55]

Rifle cartridges of the 1860s were heavy, large-caliber tubes the size of a man's finger, and line infantry in the field, laden with all sorts of kit, could carry no more than sixty of them. For muzzle-loading infantry, sixty rounds amounted to an hour's fire, for it took a minute to stand a percussion rifle on its end and load it with a ramrod. However, for a breech-loading Prussian rifleman, who could load his rifle in *any* posture – standing, kneeling, or lying prone – and still get off four or five aimed shots in a minute, sixty rounds would last no more than fifteen minutes, not enough time for a platoon to skirmish, let alone battle the enemy's main force.

In view of this disturbing fact, all armies save Prussia's rejected the early breech-loaders. Since reloads had to be conveyed in ammunition wagons that, in battle, unfailingly ended up at the wrong end of an army's baggage train, commanders thought it wiser to forgo the possible advantages of rapid fire for the certainty of fire *control*: the methodical delivery of salvos aimed by a company's NCOs – who strode down a line of riflemen calling out ranges – and triggered on the command of an officer. Volley fire was always more accurate than individual fire because it was supervised, and its *moral* effect often proved decisive. Whereas individual fire merely pecked at enemy formations, salvo fire scythed them to the ground in an instant. Met with a volley, whole files would collapse amid spurting blood and shattered limbs, the cries of the wounded inducing reserve companies to retire rather than press an attack.[56]

"Fire as little as possible with the infantry, and then charge with the bayonet," Frederick the Great had counseled a century earlier, and this remained the view of most European generals in the 1860s. Had not all European armies taken on sufficient "light infantry" to do the work of "skirmishing" in the course of the Frederician and Napoleonic Wars?[57] By the 1860s, France had added sixty-three battalions of *chasseurs*, Prussia fifty battalions of fusiliers, Italy forty battalions of *bersaglieri*, and Austria forty battalions of *Jäger*, which, like "*chasseur*," meant "hunter," and perfectly described the function of light infantry: to stalk an enemy's skirmishers, drive them off, and provide covering fire for the advance of the line infantry, who would otherwise, given their dense formations, be easy marks for enemy sharpshooters.[58]

In the years before 1866, which would mark a watershed in infantry tactics, most generals believed that skirmishers, advancing in a protective screen before their comrades of the line, knew all that an army needed to know about range-taking and musketry. Loading and firing their stubby carbines at twice the speed

55 Strachan, *European Armies*, p. 112.
56 Jay Luvaas, *The Military Legacy of the Civil War* (Chicago: University of Chicago Press, 1959), pp. 42, 173.
57 Strachan, *European Armies*, pp. 27–32.
58 Vincennes, AAT, MR 47/1634, Strasbourg, November 30, 1855.

of line infantry, actually *using* their backsights, and ducking in and out of cover, light infantry battalions would be able to rock an enemy force back on its heels, throw off its aim, and permit their own massed line regiments to come up and put the enemy to rout with the bayonet.

Such was the tactical orthodoxy in 1866, which Moltke would shortly transform as radically as he was transforming strategy. In all of their mobilizations, wars, and maneuvers between 1848 and 1864, the Prussians had wavered uncertainly between the "shock tactics" they and other European armies had employed in the Napoleonic Wars and the revolutionary new "fire tactics" that their needle rifle, with its high rate of fire, made possible. This vacillation accounted for the scorn a French officer heaped upon the Prussian army after observing its maneuvers in 1861: "Prussia," he sneered, "is compromising the military profession."[59] The low opinion France and the other European powers had of Prussia began to change three years later, when Prussian rifles shredded the Danish army in a series of bloody clashes and staff chief Moltke decided to abandon shock tactics altogether and trust instead in fire.

Moltke's tactical innovation, which split the massed Prussian battalion column into more nimble rifle companies and platoons that could be deployed in skirmish lines to bring every quick-firing rifle to bear, was at first ridiculed by contemporaries. Prussia's first soldier in the 1860s, eighty-year-old Field Marshal Friedrich von Wrangel, who briefly commanded the Prussian contingent in Denmark in 1864, considered Moltke's fire tactics "uncontrollable" and "dishonorable," for they dispersed troops in ragged lines and dealt deadly blows not face-to-face but from concealment and at a distance.[60] Much more serious than Wrangel's cavils was an objection raised in early 1866 by General Adolf Schönfeld, the Austrian staff officer who had been attached to Prussian headquarters in Denmark. Schönfeld considered Moltke's tactical reforms reckless: "In Denmark," he wrote, "I repeatedly overheard Prussian officers worrying about the inability of their men to conserve ammunition for the *second, decisive* phase of a battle."[61]

Here was much cause for anxiousness. In 1864, in their first experience of combat, many Prussians had, in fact, done just what all unseasoned infantry were prone to do: wasted their precious rounds in skirmishing, where only light infantry, who took more target practice than line infantry in peacetime, could be confident of scoring a hit. In Denmark, the Prussians had been able to replace units that had emptied their cartridge pouches with fresh reserves. Against a Great Power like Austria, however, the Prussians would not enjoy this luxury. Most of their reserves would have to be committed to battle at the outset, and units that expended their ammunition prematurely would be overrun and bayoneted by Austrian "storm columns."

59 Howard, *Franco-Prussian War*, p. 18.
60 Gründorf, vol. 2, p. 198.
61 KA, Nachlässe, B/572:1 (Nosinic), Vienna, March 1866, GM Schönfeld, "Charakteristik preussischer Armee."

In short, the arguments against fire tactics were compelling. Was it not safer and more sensible to develop battles in the traditional style? "Traditional" in the 1860s meant beginning with a cannonade, throwing out skirmishers and dragoons to harass the enemy and pinpoint his positions, battering through weak spots with massed columns of line infantry, then pursuing with the entire cavalry and gun reserve once the line regiments had breached or flanked the enemy's formation. In the pivotal 1860s, only Moltke had the courage to defy this model by recasting Prussian infantry tactics.

Whereas the Austrians ruled out fire tactics from the start, believing it all but impossible to teach uneducated peasant recruits to measure ranges and aim fire at moving targets, Moltke believed that, given sufficient training, all Prussian recruits, not just the fusiliers, could learn to use their rifles to deadly effect at short, medium, and even long range.[62] Thus between 1862 and 1864, while the Austrians actually reduced their annual expenditure on target practice and began to rely upon cheap, easily managed shock tactics instead, the Prussian army went on a shooting spree. At a time when Austrian recruits were allotted just twenty practice rounds per year, Prussian recruits fired 100. And while Austrian recruits fired their twenty rounds at fixed targets over fore- and backsights aligned by vigilant NCOs, Prussian recruits were made to rove back and forth and side to side on the rifle range, learning to use their own sights to compensate for the arc of a bullet and recording the success or failure of each practice shot in a "shooting log."[63]

Moltke's intensive shooting practice was accompanied by an emphasis on small-unit tactics. Whereas the Austrians, Russians, French, and Italians rarely exercised line infantry in formations smaller than the half-battalion, Moltke realized that such massed formations would only squander the needle rifle's unique advantage, its rapid rate of fire. If Prussian infantrymen were crammed together like Russians or Austrians in narrow, deep shock columns, the majority of them would never be able to use their rifles for fear of shooting their comrades in the back. Thus, over opposition from conservatives like Wrangel, who thought shock columns an essential element in any order-of-battle, Moltke decentralized the Prussian regiment, encouraging its battalions to subdivide as circumstances required into half battalions, companies, platoons, and sections. Thus divided, even small Prussian units would be able to outflank massed enemy formations and destroy them with cross fire.[64]

Moltke's emphasis on fire and the small unit was, in sum, a smaller, *tactical* version of his larger, *strategic* doctrine of envelopment. Exploiting the flexibility and firepower of the Prussian battalion, he would aim to make every brush with

62 Geoffrey Wawro, "An 'Army of Pigs': The Technical, Social, and Political Bases of Austrian Shock Tactics, 1859–66," *The Journal of Military History* 59 (July 1995), pp. 407–34.
63 "Die Schiessübungen der k. preussischen Infanterie," ÖMZ 3 (1865), p. 20.
64 Vincennes, AAT, MR 3/1537, Paris, June 1866, Capt. de Mille, "Notice sur l'Armée Prussienne."

the enemy a *Kesselschlacht*, regardless of the numerical odds arrayed against him. Firing four rounds in the time it took the enemy to fire one, Prussian infantrymen would, in theory, be able to shoot their way through four times their strength in order to keep their rendezvous with Moltke's rolling envelopment of an enemy army.[65] Most considered Moltke's theory preposterous, but it would prove itself in 1866 and become the tactical basis of Prusso-German strategy thereafter.

AUSTRIAN STRATEGIC AND OPERATIONAL DOCTRINE, FROM ARCHDUKE KARL TO BENEDEK

Austria in the 1860s had no Moltke. This was not for lack of native talent, but was rather a consequence of the peculiar culture of Habsburg Vienna. Though well-meaning, Emperor Franz Joseph I was in 1866 what he would remain until his death in 1916, an ineffectual trimmer. He dreaded conflict and, after an early and unsuccessful experiment with authoritarian rule in the 1850s, tended to preempt every possible source of discord with a compromise. As the emperor's politics went, so went his military affairs. In 1860, under pressure from public opinion to atone for the monarchy's humiliating defeat in Italy, the emperor rudely jettisoned his General Staff chief of ten years, seventy-two-year-old Field Marshal Heinrich Hess, and replaced him with a younger, more *popular*, but much less qualified man.

The general Franz Joseph selected to replace Hess was fifty-seven-year-old Ludwig Benedek, the only Austrian hero to have emerged from the Habsburg defeat at Solferino, where Benedek's corps had bravely covered the Austrian army's retreat over the Mincio river bridges to safety. Prodded by imperial propagandists, who made the most of this single bright spot in an otherwise dreary campaign, the Vienna press dubbed Benedek Austria's "second Radetzky," and the emperor responded by rather too hastily making Benedek a *Feldzeugmeister*, a lieutenant-general, promoting him over a half dozen more capable officers and putting him simultaneously in charge of Austria's largest standing army – the Army of Italy in Verona – as well as the imperial General Staff in Vienna.[66]

Benedek's meteoric rise was fraught with danger, for the Feldzeugmeister was a notoriously incompetent strategist. His promotion had been a political ploy by Emperor Franz Joseph to win popularity among Austria's newly enfranchised middle class, who revered Benedek for his colorful personality and common origins and tended to overlook the Feldzeugmeister's obvious shortcomings as a staff officer. Benedek, the son of a provincial doctor, loudly disdained military

65 Royal instructions for Prussian maneuvers in 1863 conjectured that "with the needle rifle, 300 men armed with the needle rifle are equal to 900 men with muzzle-loaders." Moltke, "De l'influence des armes perfectionées sur le combat," *Militär-Wochenblatt*, July 8, 1865. "Die Waffenwirkung in der preussischen Gefechten im Feldzuge 1864," ÖMZ (1865), pp. 126–7.
66 Eduard Heller, "Benedek und Benedek-Legenden," *Militärwissenschaftliches Mitteilungen* (Vienna, 1937), pp. 2–3.

2. General Ludwig Benedek (1804–81), commander of the Austrian North Army in 1866

science and often joked that he had not read a book since leaving Vienna's war college decades earlier. Among his aphorisms on war was the observation that "the only talents required in a staff chief are a strong stomach and a good digestion."[67]

67 Hans Delbrück and Emil Daniels, *Geschichte der Kriegskunst im Rahmen der politischen Geschichte*, 7 vols. (Berlin: Georg Stilke, 1907–36), vol. 5, p. 421. Klaus Koch, *Franz Graf Crenneville* (Vienna: Österreichischer Bundesverlag, 1984), p. 182. Wolf Schneider von Arno, "Der österreichischer-ungarische Generalstab." Vienna Kriegsarchiv Manuscript, n.d., vol. 7, p. 12.

Though well liked by his enlisted men, who relished the occasional taunts Benedek directed at the "blue-blooded baboons" and "bookworms" on his staff, the Feldzeugmeister cut a different figure among his officer colleagues, many of whom despised and feared Benedek for his vulgarity and the powerful hold he exercised upon the romantic young emperor's imagination.[68] This influence peaked in the early 1860s, when Franz Joseph first made Benedek imperial staff chief and then, at the Feldzeugmeister's request, relieved him of the post in 1864 and gave it to Benedek's best friend and adjutant, General Alfred Henikstein – the rather dissolute, fifty-four-year-old scion of a Jewish banking house – who very reluctantly made the move from Verona to Vienna to take charge of Austrian strategic planning as Austria's war with Denmark wound down.

The weakness of character that would mark Emperor Franz Joseph's entire reign was never more apparent than in this fateful decision to ratify Benedek's careless choice of Henikstein. Henikstein's army career had been undistinguished, and he had nothing to recommend him for his new responsibilities save his friendship with the Feldzeugmeister. Bewildered Austrian officers, who sought a new course after the débacle of 1859, rightly saw in this bizarre appointment the triumph of court politics over efficiency. Benedek, it was whispered, felt isolated in Verona and wanted someone from his personal circle installed at Vienna to deflect challenges to his power within the Habsburg army.[69] What *other* explanation could there have been for the appointment of a man as hapless as Henikstein to such a crucial post?

In the years between his appointment in 1864 and the war of 1866, Henikstein did little to improve Austrian preparedness for the two-front war with Prussia and Italy that looked increasingly likely after Italy began demanding Habsburg Venetia in 1861, and after Prussia began pressuring Austria to sell or cede it Vienna's half share in Schleswig-Holstein, which the two German powers had wrested from Denmark in 1864. Despite the clear and present danger of these explosive German and Italian questions, Benedek did nothing to correct Henikstein's drift. On the contrary, in 1865 he wrote Henikstein that he was using his influence in Vienna to have his friend assigned an industrious *sous-chef*, who would see to Austrian strategic planning so that Henikstein, whom Benedek valued above all for his qualities as "paterfamilias, gigolo, gourmand, gambler and stag hunter," could devote his time to more important pursuits.[70]

Ludwig Ritter von Benedek, *Benedeks nachgelassene Papiere*, ed. Heinrich Friedjung (Leipzig: Grübel und Sommerlatte, 1901), pp. 373–4.

68 Antonio Schmidt-Brentano, *Die Armee in Österreich* (Boppard: Harald Boldt, 1975), pp. 318–19, 382. Koch, *Crenneville*, p. 163. Eduard Bartels, *Kritische Beiträge zur Geschichte des Krieges im Jahre 1866* (Zurich: Caspar Schmidt, 1901), p. 247. Antoine Mollinary, *Quarante-six ans dans l'armée austro-hongroise, 1833–1879*, 2 vols. (Paris: Fournier, 1913), vol. 1, pp. 96–7. Alfred von Schlieffen, "Benedeks Armee-Führung nach den neuesten Forschungen," *Vierteljahrshefte für Truppenführung und Heereskunde* 8 (1911), p. 180.

69 Bartels, *Kritische Beiträge*, p. 24. Arno, vol. 7, pp. 81–5.

70 Delbrück, vol. 5, p. 241.

3. General Alfred Henikstein (1810–82), Austrian General Staff chief in 1866

Although an Austrian war minister of Prussian General Albrecht von Roon's caliber might have offset the staff chief's weaknesses, Franz Joseph entrusted his war ministry to an even weaker vessel than Henikstein: fifty-eight-year-old General Karl Franck, a tractable bureaucrat whom the emperor selected in 1864 precisely for his tractability in order to quash Prussian-style army reforms at-

tempted by the emperor's outgoing minister of war, General August Degenfeld.[71] The emperor rejected Count Degenfeld's reform proposals, which ranged from a promotion exam for officers to the creation of twenty new infantry regiments, on the dubious grounds that such innovations violated army "tradition." A promotion exam, Franz Joseph protested, would have interfered with his "imperial prerogative" to appoint courtiers to key military posts. New regiments, he objected, would have been like "bastards," hastily formed rucks of men without the stirring example of a centuries-long regimental history. Bucking the trend of the nineteenth century, which was toward smaller, more flexible, and fire-intensive units, the emperor and his powerful young adjutant general, forty-five-year-old Count Franz Folliot-Crenneville, ultimately agreed to create just half the number of new regiments recommended by Degenfeld and, for the rest, insisted that new recruits simply be layered over old ones in the existing, increasingly unmanageable battalions of Austria's "ancient regiments."[72]

With a leading mind like Franz Joseph's tracing the outlines of Austrian strategy and army organization, Benedek, Henikstein, and Franck can hardly be assigned the entire blame for Austria's military stagnation in the 1860s. Nevertheless, their own papers confirm that none of them was nearly as prolific or energetic as Moltke or Roon. Indeed, by 1865, the usually jovial Henikstein, who sometimes had to escort the sickly Franck to ministerial councils in order to speak for him, seemed himself demoralized by the Austrian high command's slack performance. Early that year he actually recommended that the vital post of General Staff chief be folded up and merged in the Habsburg war ministry's "operative department," which was managed by one of Franck's sixteen deputies.[73] Needless to say, less redoubtable contrasts to Moltke and Roon could scarcely be imagined.

Austria, in short, failed to fashion effective responses to Moltke's new strategic and tactical concepts. For want of anything better, Austrian strategists of the 1860s fell back upon the Restoration prescriptions of Jomini and Archduke Karl Habsburg. Karl, who had defeated Napoleon in battle at Aspern in 1809, had written prolifically on war until his death in 1847. The archduke's strategic *pensées*, though set down in the 1830s and 1840s, were not actually published in Austria until 1862, when, rather unwisely, they were seized upon by Austrian staff officers as a home-grown basis for Austrian strategy.

The Austrian and Prussian strategic schools could not have been more different. Whereas Clausewitz had gone so far as to commend war as an "extension of policy," Karl rejected war as a grand strategic option under all but the most

71 Koch, *Crenneville*, p. 188. Bernhard Ritter von Meyer, *Erlebnisse*, 2 vols. (Vienna: Carl Satori, 1875), vol. 2, pp. 63–5, 95.
72 Koch, *Crenneville*, pp. 161–4, 178–80. Mollinary, vol. 1, p. 104.
73 Eugen Frauenholz, "FML Alfred Freiherr von Henikstein im Jahre 1866," *Münchener Historische Abhandlungen* 2/3 (1933), pp. 34–5.

desperate circumstances. "War," Archduke Karl judged, "is the greatest evil a state can experience."[74] Noting that Napoleon had overextended himself in the course of his wars, Archduke Karl posited a more cautious, *defensive* alternative to Napoleonic-Clausewitzian theory. Clausewitz's insistence that the goal of all armies ought to be the destruction of the enemy's armed force derived from Napoleon's maxim that the task of an army was no more complicated than "to march, fight, and camp." The French emperor had often ignored lines of supply and retreat in order to land annihilating blows. By regularly flouting the "rules of war," Napoleon had consistently achieved the element of surprise and won major victories over more numerous enemies.[75]

Nevertheless, Austria's Archduke Karl considered that Napoleon's constant improvisations had ultimately undone him. Restless offensives had wasted the energies of France and opened it to invasion in 1814. For Austria, Karl sought a more sustainable system of defense and found it in the seventeenth-century proposition that "the occupation of strategic points is the decisive factor in war."[76] To block the punches of a future Napoleon, Archduke Karl conceived a defensive strategy based upon improved fortresses, fixed lines of communication, and the assumption that Austria and Europe contained a finite number of "keypoints," the control of which would ensure victory regardless of enemy maneuvers. "Every state," Karl opined in 1840, "contains strategic points that determine its fate. These points are the keys of the land."[77]

A more complete rejection of Napoleonic, Clausewitzian, and *Moltkean* doctrine could scarcely be imagined. The archduke called for Austria's transformation into "a defensive system" girded by fortresses, "which would protect the whole by protecting the parts," a recommendation that was implemented at tremendous expense by the Habsburg army in the decades after Waterloo.[78] Menaced by the Russians in the east, the Italians in the south, the French in the west, and the Prussians in the north, the Austrians spent a billion florins (c. $13.5 billion in 1995 dollars) to construct new fortresses and renovate old ones in the years between 1815 and 1866. Between 1833 and 1849, the Austrian army spent 100 million florins ($1.35 billion) just to construct the four Quadrilateral forts in Venetia, which sealed Austria's Italian flank with polygonal works at Mantua, Peschiera, and Legnago, and an entrenched camp at Verona.[79] In the German Confederation, Austria contributed 60 million florins ($810 million) to the con-

74 Strachan, *European Armies*, pp. 66, 93–4.
75 Delbrück, vol. 4, pp. 488–93, 504. Hamley, p. 56.
76 Erzherzog Karl, "Verteidigungssystem des Kriegsschauplatzes," *Militärische Werke*, 3 vols. (Vienna: k.k. Hof-und-Staatsdruckerei, 1862), vol. 1, p. 89. Günter Brüning, "Militär-Strategie Österreichs in der Zeit Kaiser Franz II. (I.)," (phil. Diss. Münster, 1982), pp. 60–2, 267–72.
77 Cited in Joszef Zachar, "Die Frage des Verteidigungs-Krieges im Gebirgsland," in *Clausewitz, Jomini, Erzherzog Carl*, ed. Manfried Rauchensteiner (Vienna: Österreichischer Bundesverlag, 1988), p. 131.
78 Erzherzog Karl, "Verteidigungssystem," *Militärische Werke*, vol. 1, p. 9 ("ein Defensionssystem").
79 Aresin, *Das Festungsviereck von Oberitalien* (Vienna: k.k. Hof-und Staatsdruckerei, 1860), pp. 7–8.

struction of modern forts at Mainz, Luxemburg, Ulm, Rastatt, and Landau to deter a French (or Prussian) grab at the left bank of the Rhine and a descent on the Danube by either foe.[80] Along Austria's border with Prussia, the Habsburg war ministry elected not to subsidize the construction of better roads or railways to speed foot regiments to threatened points in the Prussian style but, instead, to maintain Empress Maria Theresa's "northern Quadrilateral," the antiquated Elbe forts at Theresienstadt, Königgrätz, and Josephstadt, which, in Frederick's day, had blocked Prussia's march routes to Vienna.

The maintenance of so many facilities that had long since been circumvented by new roads and railways highlighted the essential difference between Austrian and Prussian war planning in the 1860s. The Prussians had begun decommissioning their old forts as early as the 1840s and had transferred some of the savings to their strategic railways. In 1861, Moltke argued for an acceleration of this process, reiterating words he had first set down in 1843: "Every new development in railways is a military advantage; and for the national defense, a few million on the completion of our railways is far more profitably employed than on our fortresses."[81] The Austrians took the opposite course, doggedly plowing military appropriations into fixed fortifications rather than railroads.[82] In 1861, Franz Joseph plucked Field Marshal Hess from retirement and entrusted him with the job of pushing a *new* cycle of fortress construction through parliament, a 140 million florin ($1.89 billion) project that, the emperor argued, would "close the gaps" once and for all in Austria's straggling frontiers.[83] And in 1865, when called upon to pass judgement upon Moltke's cut-and-thrust methods in the Danish War, Colonel Ferenc Vlasits, who had planned Austria's invasion of Denmark, condemned Prussian operations as "too turbulent. . . . Although Prussian strategists appreciate the value of initiative, the rash deed and an exploited victory," Vlasits scolded, "they do not understand the critical, nay, *decisive* importance of lines of communication. They are incorrigible optimists, and have failed to organize life-sustaining arteries to the rear in the course of their tumultous, forward operations."[84]

In tactics, Franz Joseph and the Austrian high command proved no less retrograde. They had been too easily impressed by the winning example of French shock tactics in 1859, when Austria's unskilled line regiments had been routed by

80 Hans Kramer, *Österreich und das Risorgimento* (Vienna: Bergland Verlag, 1963), p. 54. Heinrich Benedikt, *Kaiseradler über dem Appenin* (Vienna: Verlag Herold, 1964), p. 128.
81 Howard, *Franco-Prussian War*, pp. 2–3.
82 *Stenographische Protokolle über die Verhandlungen des Abgeordnetenhauses (SPA)* (Vienna: k.k. Haus-Hof-und Staatsdruckerei, 1865), 3. Session, 54. Sitzung, p. 1460.
83 KA, Nachlässe, B/2:127 (Beck), "Antrag im Herrenhause des FM Frhr. von Hess über die höchsten und wichtigsten militärischen Interessen der Monarchie, 1863." *SPA*, 3. Session, 192. Sitzung, November 26, 1862, p. 4767. Edmund von Glaise-Horstenau, *Franz Josephs Weggefährte* (Zurich and Vienna: Amalthea, 1930), p. 80.
84 KA, Nachlässe, B/572 :1 (Nosinic), Vienna, March 26, 1866, Col. Vlasits, "Über die preussische Armee." Vlasits concluded his summary of Moltkean strategy thus: "Although the Prussian *Operationskrieg* has a hearty appetite, once it plucks the fruit, it does not know how to bear it safely home."

columns of hard-charging French infantry. After Solferino, Franz Joseph had vowed never again to trust in fire, irrationally insisting that "only *motion* will bring victory."[85] What the Austrian emperor failed to appreciate was that the Italian War of 1859 told far less about tactics than it did about the ineptitude of the Austrian army. Though flush with cash in the 1850s, when the Habsburg military had joined with the emperor's civil bureaucracy to rule Austria "neo-absolutistically," the army had squandered most of that wealth on luxuries, forts, and superfluous offices. Precious little money had trickled down to the line troops, most of whom had not even been instructed in the use of their new Lorenz rifles when war broke out in 1859. Thus, though armed with the best rifle in Europe and deployed in small battalion "divisions" of 300 men, which, in theory, were able to maneuver in groups of three to enfilade France's massed battalions of 600, the Austrians had actually shot badly in 1859 and, exhibiting a stolid disregard for their own tactical manual, had refused to maneuver jointly, permitting the French battalions to infiltrate between the Austrian "divisions" to rout them one after the other.[86]

To what was this bungling attributable? Friend and foe alike ascribed the poor performance of the Austrian regiment in battle to two things: the profligacy of the Habsburg high command, which spent lavishly on bureaucracy and sparingly on troop exercises, and the benightment of the average Austrian foot soldier, who grew up in poor, rural areas without even a primary education and could thus not be expected to grasp the science of musketry or even the Habsburg army's German "language of command."[87] In the years between 1859 and 1866, the Habsburg war ministry budgeted far more for bureaucracy and office buildings than it did for fighting men, weapons, and training.[88] Under the indulgent gaze of Franz Joseph, who viewed the imperial army as a political strut in his ceaseless struggle with antidynastic parties, the Habsburg army became a flabby, over-officered, over-administered jobs bank. Each year, more money was appropriated for "provincial commands," "supernumerary officers," and pensions than was taken for Austria's eighty infantry regiments of the line, which never learned to shoot, use cover, or fight in small units – the three things that Moltke was emphasizing in Prussian infantry training after 1859.[89]

Rather than spend at the Prussian rate for tactical exercises, Franz Joseph opted

85 Delbrück, vol. 5, p. 404.
86 KA, AFA 1866, Karton 2275, 13–165, 1936, "Vor 70 Jahren: Waffe, Taktik und Strategie."
87 Geoffrey Wawro, "An 'Army of Pigs': The Technical, Social, and Political Bases of Austrian Shock Tactics, 1859–66," *The Journal of Military History* 59 (July 1995):407–34. István Deák, *Beyond Nationalism* (New York: Oxford University Press, 1990), pp. 98–100. D. N., "Über die Truppensprachen unserer Armee," ÖMZ 2 (1862), pp. 365–7. V. R. Streffleur, "Österreich am Schlusse des Jahres 1866," ÖMZ 1 (1867), pp. 2–7.
88 *SPA* (1865), pp. 1442–3, 1469–81. *Stenographische Protokolle über die Verhandlungen des Herrenhauses* (Vienna: k.k. Haus-Hof-und Staatsdruckerei, 1862), p. 911.
89 Geoffrey Wawro, "Inside the Whale: The Tangled Finances of the Austrian Army, 1848–1866," *War in History* 3 (February 1996):42–65.

4. Habsburg Emperor Franz Joseph (1830–1916) in 1866

for shock instead. It was a cheap, simple substitute for Prussia's fire tactics. Shock spared the emperor the considerable cost of rifle training and gave him the means to preempt language and morale problems by literally herding his ethnically mixed regiments together like cattle.[90] After 1861, only Austria's light infantry

90 "Vorschläge zur taktischen Vervollkommung der Infanterie," *ÖMZ* 1 (1860), pp. 31–2. KA, Nachlässe, B/214:2 (Krismanic), 494, Verona, February 6, 1860, FML Degengeld, "Truppen-Instruktion Nr. 5." Walter Wagner, *Von Austerlitz bis Königgrätz* (Osnabrück: Biblio Verlag, 1978), pp. 148f.

(*Jäger*) would use their rifles. The line infantry – with the intervals between their columns reduced from fifty-four paces in 1859 to just twelve in 1866 – would function as steamrollers.[91] Although Austrian tacticians allowed that "battalion masses" would suffer heavy casualties in their front files if deployed against quick-firing Prussian rifles, they reasoned that the *bulk* of each shock column would survive to trample dispersed enemy rifle companies as cruelly as the French had trampled Austria's scattered "battalion divisions" in 1859.

The results of the Austro-Prussian invasion of Denmark in 1864 ought to have given Austrian tacticians pause, for Denmark's army resembled Austria's in many ways and was easily beaten by the Prussians. The Danish army of 1864 embodied a high percentage of German officers and NCOs – career soldiers from the German Confederation – yet most of its line infantry were untrained Danish peasants. Like the Austrians, the Danes viewed shock as the easiest, most economical way to organize big drafts of green conscripts.[92] However, each time Danish "storm columns" charged Prussian firing lines, they were driven off with heart-rending losses. In early 1864, a small action at a place called Lundby in Jutland furnished a textbook example of the futility of shock against well-handled rifles. At Lundby, 180 Danes encountered 124 Prussians on an open moor, formed in two company columns, fixed bayonets, and charged the Prussians, who deployed in line, waited till the Danes had closed to within 250 meters' range, then fired a salvo. The Danes, weary from their long run, staggered, but came on. The Prussians fired a second salvo at 200 meters, a third at 150 meters. The Danes halted, fired a ragged volley, and retired in confusion. In a minute's time, they had lost three officers and eighty-five men, half their effectives. To press their attack, the Danes would have had to cross the final 150 meters into three or four more Prussian salvos and a final burst of individual fire; it was impossible. Even the Austrian war ministry, a dévoté of shock, had to applaud "the awesome result of the Prussian rifle at Lundby, achieved by the methodical, quick delivery of aimed salvos . . . against two Danish companies in closed order."[93] Colonel Ferenc Vlasits, staff chief of the Austrian expedition to Denmark, recalled a similiar episode elsewhere in Jutland. "I saw one Prussian company hold off two Danish companies with rapid fire. The Danes could not even *launch* a storm attack."[94]

Immediately after the Danish War, the Austrian war ministry evaluated Prussia's needle rifle afresh, but concluded that the "purely theoretical claim" of the superiority of Prussian fire tactics had "not been tested in the Danish War." Why? Because the Danish War offered "no great pitched battles involving large numbers

91 Vincennes, AAT, MR 54–55/1634, 1869, "Composition des armées permanentes en Prusse, Autriche, etc."

92 Vincennes, AAT, MR 53/1478, Augustenborg, April 13, 1864, Lt-Col. Février to Marshal Randon.

93 "Die Schiessübungen der k. preussischen Infanterie," *ÖMZ* 3 (1865), pp. 19–20.

94 KA, Nachlässe, B/572:1 (Nosinic), Vienna, March 26, 1866, Col. Vlasits, "Über die preussische Armee."

of troops in the open field. . . . It was largely a war of *tirailleur* skirmishes." When the Danes were not potting from behind trees and stone walls, they were entrenched or holed up in fortresses.[95] These cavils were partly justified. Moltke himself allowed that "in the Danish War . . . our rifle never proved itself in a *real* battle."[96] Nevertheless, how could the Austrian war ministry overlook the import of its own observations at Lundby and other combats like it; namely, that against densely packed, large troop masses traversing open fields without adequate skirmishers, the Prussian needle rifle would be optimally effective?

Overall, Austria's response to the Danish War was profoundly superstitious. Noting that Austrian shock tactics had garnered no fewer victories than Prussia's fire tactics in Denmark, though at a much higher cost in casualties, the Austrian General Staff concluded that the *moral* advantage of shock far outweighed the risk of casualties. When the emperor asked General Adolf Schönfeld – a Hofburg adjutant and staff officer who had campaigned with the Prussians in 1864 – to juxtapose Austrian and Prussian battle tactics, Schönfeld submitted a revealing memorandum. "Prussian troops," he wrote, "are just *too* intelligent, *too* methodical. They lack the Austrian's *moral* factors: peace of mind, *sang-froid*, stamina and the resolve to give and take hard blows without regard for the price." Schönfeld had come to this conclusion at Prussia's siege of Dybbøl in 1864, where he contrasted the "caution, methodicism and pedantry" of the Prussian with the "fresh, happy soldier's courage" of the Austrian. Prussians, Schönfeld concluded, lacked "*élan*," Austria's motive force.[97]

While the Austrian General Staff completed its analysis of the Danish War and Prussian fire tactics, Feldzeugmeister Benedek, who would shortly be given command of the Austrian army, persisted in viewing massed frontal attacks as the best way to proceed against Prussian infantry. Storm attacks would succeed, he rather stupidly insisted, "because given the excellent Prussian rifle, the Prussians will never *expect* us to attack their front." Ignoring the well-publicized example of Lundby, Benedek instructed his corps generals to proceed against Prussian units thus: "Close resolutely to within 300 paces and then sprint at the enemy and overthrow him."[98] France's army attaché in Vienna was understandably skeptical: "High military men here assert that Austria will fall on the Prussians with the bayonet. To me, it seems more a question of whether or not the Austrians will ever actually *reach* the Prussians."[99]

95 "Die Waffenwirkung in der preussischen Gefechten im Feldzuge 1864," *ÖMZ* (1865), pp. 126–7.

96 Vincennes, AAT, MR 61/1536, Moltke, "De l'Influence des armes perfectionées sur le combat," *Militär Wochenblatt*, July 8, 1865.

97 KA, Nachlässe, B/572: 1 (Nosinic), Vienna, March 1866, GM Schönfeld, "Charakteristik preussischer Armee."

98 KA, MKSM-SR 1866, 24/5, Vienna, May 19, 1866, FZM Benedek, Corps-Befehl Nr. 8, "Gefechtsweise der Preussen und Normen für das eigene Verhalten." Toilow, *Die österreichische Nordarmee*, p. 28.

99 Vincennes, AAT, MR 68/1606, Vienna, April 25, 1866, Col. Merlin to Marshal Randon.