The Limits to Revolutions in Military Affairs: Maurice of Nassau, the Battle of Nieuwpoort (1600), and the Legacy

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Abstract

"Revolutions in Military Affairs" (RMAs) currently interest both historians and strategic analysts, but how exactly do they occur, why do they prove so decisive, and what (if any) are their limits? This essay seeks answers through the detailed study of one critical element of an earlier "Revolution in Military Affairs"—infantry volley fire—tracing its invention, first in Japan in the 1560s and then in the Dutch Republic in the 1590s, and its first use in combat at the battle of Nieuwpoort in 1600 by a Dutch army commanded by Maurice of Nassau. It then examines the current RMA in the light of that case study.

Four military innovations in early modern Europe facilitated the rise of the West. After 1430, the development of heavy bronze gunpowder artillery made possible the destruction of almost all fortifications of traditional vertical design, while a century later the creation of fortresses of geometrical design restored the advantage in siege warfare to their defenders. Around 1510, naval architects began to place heavy artillery aboard full-rigged sailing vessels, creating floating fortresses that proved incomparably superior to any non-Western fighting ships. Finally, in the

1590s, the invention of infantry volley fire (one rank of infantry firing in unison and then reloading while other ranks fired in turn) permitted the defeat of far larger enemy forces, whether mounted or on foot, in the field. These four developments had by 1775 allowed relatively small groups of Europeans to conquer most of the Americas, Siberia, and the Philippines, and parts of South Asia—over one-third of the world’s land surface—and to dominate the world’s oceans. By 1914, thanks to continuing military and naval superiority, the West had won control of over three-quarters of the world’s land surface as well as almost all the world’s oceans. Although thereafter the West lost its colonies, in the late twentieth century another series of linked military changes gave Western forces an overwhelming superiority in almost all forms of armed conflict.1

The Office of Net Assessment within the Pentagon used the acronym “RMA,” standing for “Revolution in Military Affairs,” to describe the “interaction between systems that collect, process, fuse and communicate information and those that apply military force” that has enabled the West to use “precision violence” against its foes.2 But how do such

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military transformations occur, whether in the past or the present; why do they prove so decisive; and what (if any) are their limits? This essay seeks answers through the detailed study of one critical early modern innovation—infantry volley fire—and its first use in combat at the battle of Nieuwpoort in 1600 by the army of the Dutch Republic commanded by Count Maurice of Nassau. It then examines the current RMA in the light of that case study.

The Birth of Volley Fire

The film Zulu contains one of the most effective visual representations of volley fire, as some 150 British redcoats defend a farmstead at Rorke's Drift, South Africa, against attacks by thousands of Zulus in 1879. By then, this tactic formed the standard battle drill of Western infantry, whether against non-Westerners (as in the film) or against each other (as in the American Civil War). But when and where did it originate?

Volley fire was invented twice in the sixteenth century: in Japan during the 1560s and in the Dutch Republic in the 1590s. The first Portuguese visitors to Japan in 1543 arrived with some harquebuses (smoothbore muzzle-loading guns about 1.3 meters long that fired 20-gram lead balls) in the middle of an era of civil war. Many local warlords, seeing the advantage of adding a powerful new weapon to their arsenals, ordered their metalworkers to make Western-style harquebuses but, like all smoothbore muzzle-loading firearms, the Japanese guns proved both highly inaccurate and slow to reload. In the 1560s, the warlord Oda Nobunaga, perhaps inspired by the fact that Japanese archers normally fired volleys in rotation, realized that soldiers with firearms drawn up in ranks could maintain a constant barrage, however long it took them to reload, if the first rank fired and then reloaded while subsequent ranks fired. In 1575, at the battle of Nagashino, Nobunaga deployed 3,000 men with guns who delivered volleys with devastating effect. Handheld firearms soon became the most important infantry weapons in Japanese armies. At the siege of Hara castle in 1638, the last major deployment of

Figs. 1–2. “Book Illustrating Thirty-Two Positions” (Sanjuni-so Esu) by the Inatomi Firearms School, a 1607 copy of a 1595 manuscript. Thirty of the images show different positions for marksmen—some mounted or on a boat for hunting, others against human targets (including the one on p. 336 involving a prisoner with his hands tied)—together with notes on stance ("Must keep the knees apart") and advice on sighting. (Courtesy New York Public Library, Spencer Collection, Japanese MS 53. Published with permission.)
Japanese troops in action for two centuries, 30 percent of the government forces possessed handguns.4

Meanwhile, “Firearms Schools” proliferated throughout Japan, and many of their teachers produced beautifully illustrated instruction manuals—albeit mostly in manuscript because they contained Hiden (secret traditions to be shared only with the initiated). Both the schools and the manuals privileged accuracy over speed: for example, thirty of the images in the manuscript “Book Illustrating Thirty-Two Positions [for firing a gun],” composed by instructors of the prestigious Inatomi Firearms School, showed different positions for individual sharpshooters engaged in hunting, in fighting (see Fig. 1), and in target practice (against a prisoner with his hands tied behind his back [see Fig. 2, p. 336]).5

Did Europe get the idea of volley fire from Japan? After all, Oda Nobunaga entertained many Western visitors, and military conversation, with Westerners among others, formed one of his principal passions.6 Although no known Western source mentions Japanese volley fire, this is merely absence of evidence, not evidence of absence: the discovery of just one document in (say) the Jesuit Archives in Rome, in which a European missionary described Japanese volley fire, perhaps associated with evidence that the recipient mentioned it to a soldier, would transform


5. I have examined manuscript copies of the Inatomi-ryu teppō denshō (Inatomi school manual of firearms), also called Sanjumi-so Ezu (Book Illustrating 32 Positions) in Tenri Central Library, Tenri, Japan (two copies: MS 3995.15; 508470 and 508471) dated to 1554–55; and in the New York Public Library, Spencer Collection: Japanese MS 53, a 1607 copy of a 1595 manuscript (some illustrations reproduced in Noel Perrin, Giving Up the Gun. Japan’s Reversion to the Sword, 1453–1879 [Boston, Mass.: Godine, 1979], 44–57). In addition, according to Kokusoku Somokuuroku, rev. ed., 8 vols. (Tokyo: Iwanami, 1989), 1:270, Kurita Library, Nagoya, Japan, has three copies dated to 1607–13; while according to the Library’s web catalogue, Gakushin University Library, Tokyo, Japan, also has three copies dated to 1607–10. Tokyo National Museum recently acquired two copies of the work from this period: see Utagawa Takehisa, “Hojutsu densho wa jidai no kagami,” Rekihaku 108 (2002): 2–5, with illustrations. The Tatsuke and Kasumi schools of firearms also produced illustrated manuscript manuals on “Seeking the mark”: see details in Kokusoku Somokuuroku, 2:473; 4:285; 5:552, 755, and 799; 7:266 and 686. On hidden or secrets (for flower arrangements, tea ceremonies, and medicine, as well as firearms) that should be shared only with a select audience, see Peter Kornicki, The Book in Japan: A Cultural History from the Beginnings to the 19th Century (Honolulu: University of Hawai‘i Press, 2001), 101. Nevertheless, some illustrations of how to fire guns for this period did appear in print: see examples in Perrin, Giving Up the Gun, 34, 37–38, and 40.

6. For Nobunaga’s love of military conversation, see Alessandro Valignano, Sumario de las cosas de Japón (1583; ed. J. L. Álvarez-Taladriz, Tokyo, 1954), 152.
the picture. Certainly, many Europeans proposed a similar tactic, for infantry everywhere faced the same problem as the Japanese: how to recharge muzzle-loading firearms before being overrun by the enemy.

Some Europeans searched for precedents in Classical history; others proposed a solution based on their own experience. In 1579 Thomas Digges, an Englishman who had served with the army of the Dutch Republic, suggested in his military treatise *Stratioticos* that experienced musketeers should “after the old Romane manner make three or four several fronts, with convenient spaces for the first to retire and unite himselfe with the second, and both these if occasion so require, with the third; the shot [musketeers] having their convenient lanes continually during the fight to discharge their peces.” Although this reflected the author’s reading of Roman military treatises, Digges also proposed a technique of his own: a “ring march,” to be maintained by detachments of twenty-five men who would fire and retire in sequence, “so as the Head shal be sure always to have charged [their muskets], before the taile have discharged; and this in a circulare march, the skirmish all day continued.” In 1588 the English musketeers who might have to oppose Spanish invaders from the Armada received instructions to practice firing their guns “in that order which the Frenche men call ‘à la file,’ or as we terme yt ‘in ranke,’” coming forward to fire and then retiring to reload while others did the same. Two years later, in the second edition of *Stratioticos*, Thomas Digges again suggested that experienced musketeers should deploy in ranks, with the first rank firing their “volee” while the second and other ranks reloaded and passed their recharged weapons forward. In 1592, Martín de Eguiluz, a Spanish veteran with twenty-four years of infantry service (most of it spent fighting against the Dutch and their English allies), published a book that included the suggestion that musketeers should skirmish in three ranks of five soldiers in order to maintain a constant fire during the action.

Thomas Digges (like the other authors) did not describe how the infantry of his day actually did train, however, but only how “I would


have them trained.” He continued sadly: “I know this opinion of mine, being different from common custome, will be of the common multitude of such men of warre as can brooke nothing but their owne customes, not onely disliked but derided and contemned.” 10 His suggestions, like those of the others, therefore came to nothing. Volley fire began in Europe only after Willem Lodewijk of Nassau, governor of the Dutch province of Friesland and commander of its troops, wrote a long letter on the subject to his cousin Count Maurice, the commanding general of the Dutch army, on 18 December 1594. 11

Like any self-respecting Renaissance man of letters, Willem Lodewijk disdained the use of just one language when he could deploy several. He began in French, discussing the use of ranks by the soldiers of Imperial Rome as described in the Tactica attributed to the ninth-century Byzantine Emperor Leo VI. In the two pages following, he provided the German or Dutch equivalents for thirty-four Latin terms in a Classical military treatise that had greatly influenced Leo: the Tactica of Aelian, written circa 100 CE. Next came three more pages in Dutch about Aelian’s discussion of various types of volley fire, in which ranks of infantry advanced, hurled spears and javelins in sequence, and then retired, a technique known as the “countermarch.” 12 On the last page of

11. Willem Lodewijk of Nassau to Maurice of Nassau, Groningen, 8/18 December 1594, draft in the hand of Everhart van Reyd with a holograph correction by Willem Lodewijk, A22-1XE-79, Koninklijke Huisarchief [hereafter KHA], ’s Gravenhage, The Netherlands. (Although the count used both the Julian and the Gregorian Calendars in his correspondence, almost certainly this time he used Julian, or “Old Style” [NS], so its “true” date was 18 December 1594 according to the Gregorian, or “New Style” [NS].) G. Groen van Prinsterer, Archives ou correspondance inédite de la maison d’Orange-Nassau, 2e série, 5 vols. (Utrecht, 1857–61), 1:334–36, printed parts of this document; L. Mulder, Journaal van Anthonis Duyck, Advokaat-Fiscaal van den Raad van State, 3 vols. (’s Gravenhage, 1862–65), 1:717–23, printed it all, followed by an “afzonderlijke aanteekening” on how the Romans had used drill to get an army on the march into battle order (ibid., pp. 723–24). The letter was also published twice in its entirety by Werner Hahlweg (who reported that the “afzonderlijke aanteekening” had disappeared): Werner Hahlweg, Die Heeresreform der Oranier und die Antike. Studien zur Geschichte des Kriegswezens der Niederlande, Deutschlands, Frankreichs, Englands, Italiens, Spaniens und der Schweiz vom Jahre 1589 bis zum Dreissigjährigen Krieg (Berlin, 1941; reprint, Osnabrück: Biblio Verlag, 1987) [hereafter Hahlweg, Antike], 255–64; and Werner Hahlweg, Die Heeresreform der Oranier. Das Kriegsbuch des Grafen Johann von Nassau-Siegen (Wiesbaden, 1973: Veröffentlichungen der historischen Kommission für Nassau, vol. 20) [hereafter Kriegsbuch], 606–10. I have followed the last-cited version, collated with the original document.
12. See The Tactiks of Aelian, or the Embatailling of an Army after ye Graecian Manner, Englished and Illustrated with Figures throughout and Notes upon ye Chapters of ye Ordinary Motions of ye Phalange by John Bingham (London, 1616;
his letter (in Dutch, with liberal injections of French, German, Latin, and Spanish), Willem Lodewijk made the crucial leap: he described how he had trained men carrying firearms to imitate one of Aelian’s “countermarch” techniques:

I have discovered ex evolutionibus [that is, from Aelian’s discussions of drill] a method of getting the musketeers and soldiers armed with harquebuses not only to keep firing very well but to do it effectively in battle order (that is to say, they do not skirmish or use the cover of hedges) in the following manner: as soon as the first rank has fired together, then by the drill [they have learned] they will march to the back. The second rank, either marching forward or standing still, [will next] fire together [and] then march to the back. After that, the third and following ranks will do the same. Thus before the last ranks have fired, the first will have reloaded, as the following diagram shows: these little dots [stippelckens] show the route of the ranks as they leave after firing.

Willem Lodewijk’s diagram showed five ranks of musketeers doing exactly what he described. He nevertheless recognized that implementing the countermarch would not be easy, and he begged Maurice, “because it may cause and give occasion for people to laugh, please do it only in private and with friends.” 13 Willem Lodewijk himself continued to drill his Friesland troops “in private” until he found the most effective system of maintaining a constant hail of fire. 14

Willem Lodewijk had first learned about Aelian and Leo from Europe’s foremost Classical scholar, Justus Lipsius, who published his Six Books on Politics in Latin in 1589, with a Dutch translation the

facsimile ed., New York: Da Capo, 1968), 125–33: chap. 28 “Of Countermarches, and the divers kindes thereof, with the manner how they are to be made.” Each variety included an engraving. See also ibid., p. 151: chap. 54, “The words of command.”

13. Hahlweg, Kriegsbuch, 610, collated with the original document in KHA. On the laughter that these early drills provoked, see Everhart van Reyd, Historie der Nederlandschier Oorlogen, begin ende voorganck tot den Jaere 1601 (Leeuwaarden, 1650), 162a: “It was all very difficult at first and, on account of its strangeness, many found it odd and laughable.” François de La Noue, Discours politiques et militaires, ed. F. E. Sutcliffe (1587; Geneva: Droz, 1967), 370–72, in a discussion of how to draw up pikes, musketeers, and harquebusiers in ranks, predicted: “perhaps some will make fun of this, saying that all these minor suggestions are more appropriate for a ballet or masquerade than for war.” In 1521, in a discussion of the need for drill, Nicolò Machiavelli had also warned that it would provoke mirth: The Art of War, trans. Ellis Farneworth (1521; New York: Da Capo, 1965), 98.

Det var det, jeg opdagede, at det med en ganske god grund til at tænke på, at det kunne være noget, der kunne hjælpe mig, når jeg skulle arbejde på en anden side.

Det var det, jeg opdagede, at det kunne være noget, der kunne hjælpe mig, når jeg skulle arbejde på en anden side.

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following year.\textsuperscript{15} The work included an entire section on how rulers could learn from the wars described by Classical authors. Lipsius saw the infantry as the battle-winner of his own times, just as it had been for Rome, and argued that modern infantry must learn to operate in smaller units (like Roman “maniples”) as well as to drill with their arms in unison and to march in step, just as Roman armies had done. “In all battles,” Lipsius asserted (echoing Classical writers), “skill and drill, rather than numbers and raw courage, normally bring victory.”\textsuperscript{16}

Willem Lodewijk began to implement Lipsius’s suggestions immediately. According to his secretary, Everhart van Reyd,

Seeing that the ancient art of war, and the benefits of battle order and speed of wheeling, reversing, turning, closing and extending ranks and files (without breaking), with which the Greeks and Romans had accomplished such splendid deeds, had vanished from the world, and were buried in forgetfulness, and since he could find no veteran colonels and captains from whom he could learn it [Willem Lodewijk] made use of all the leisure allowed by the enemy (who kept him busy) to search out what he could from old books, especially the writings of the Greek Emperor Leo, and therefore constantly drilled his regiment, making long and thin units instead of great squares, and training them to maneuver in various ways.\textsuperscript{17}

\textsuperscript{15} Justus Lipsius, \textit{Politicorum sive Civilis Doctrinae Libri Sex. Qui ad Principatum maxime spectant} (Leiden, 1589); \textit{Politica van Iustus Lipsius, dat is van de regeeringhe van landen ende steden in ses boecken begrepen}, trans. Marten Everart (Franeker, 1590; reprinted at Delft in 1623 and 1625: my thanks to Olaf van Nimwegen for this reference). Franeker was in Friesland, a province governed by Willem Lodewijk. In May 1590 the count told his father that Lipsius is “not only a learned philosopher but also a man knowledgeable in politics, from whose conversation both of my brothers must learn.” (Groen van Prinsterer, \textit{Archives}, 2e série, 1:131).


\textsuperscript{17} Van Reyd, \textit{Historie}, 162a. Duyck recorded the “arms drills” and “battle orders” by Willem Lodewijk’s troops on 15 and 18 July 1592 in considerable detail.

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\textit{Fig. 3 (p. 340).} Willem Lodewijk of Nassau describes to Maurice of Nassau his idea of adapting the “countermarch” described by Aelian in the first century CE for firearms, 8/18 December 1594. The passage quoted in the text is at the top (“Ich hebbe gevonden ex evolutionibus . . .”). Then comes a diagram with “stippelkens” (little dots) to show how the maneuver works. At the end, the count cautions that onlookers will probably laugh when they watch. (Courtesy of Koninklijke Huisarchief, ’s Gravenhage, MS A22-1XE-79, lower half of the penultimate page and last page. Published with permission.)
Meanwhile Maurice of Nassau, Lipsius's most illustrious former student at Leiden University, also put his professor's military theories into practice by training some of his troops to maneuver "in the Roman style."

In October 1594, the two disciples of Lipsius met at Arnhem, and Maurice's men demonstrated their drill. Willem Lodewijk, evidently unimpressed, suggested that his cousin's soldiers should instead imitate the maneuvers by ranks described by Aelian, just like his own troops. Maurice thereupon asked for details, and Willem Lodewijk's letter of 18 December contained them. Maurice nevertheless persisted with his own Classically inspired experiments, which another student of Lipsius, residing in The Hague, described in a letter to his mentor, by then a professor at the Catholic University of Leuven. According to the student, in spring 1595 Maurice made two groups of soldiers fight against each other "in the Roman style": sixty men equipped as "petites hastati" (probably meaning with pikes, as some thought the front line of the legions had fought) closed with forty men bearing large shields (presumably using them, like legionaries, as weapons). Lipius was not impressed. "The

which suggests that this was the first time he had seen it (Mulder, Journaal, 1:104–5). I agree with H. L. Zwitzer, "The Eighty Years War," in The Exercise of Arms: Warfare in the Netherlands, 1568–1648, ed. Marco van der Hoeven (Leiden: Brill, 1997), 36–39, that Willem Lodewijk took the lead in these critical Dutch military reforms.

18. My argument here rests on two deductions. (a) The only place where the two counts and their troops met in late 1594 was Arnhem: Mulder, Journaal, 1:486 (Willem Lodewijk arrived at Arnhem late on 11 October and was still there when Duyck left on the sixteenth), and 498 (Maurice left on 29 October). Willem Lodewijk to his father, Arnhem, 17 October 1594 NS, in Groen van Prinsterer, Archives, 2e serie, 1:325–28, described his meeting with Maurice (although Groen takes the date "7 October 1594" to be Gregorian or New Style, it must be Julian or Old Style). This was Willem Lodewijk's only opportunity to watch Maurice "exercise" his troops. (b) Having done so, Willem Lodewijk advised his cousin that he would do better to follow the drills set out in the Tactica of Emperor Leo. He clearly sent him a copy of the volume, because his letter of 18 December 1594 not only asked if it had arrived, but also cited a particular folio and text that seemed apposite: "folio 144, de variis aciebus instruenris." A chapter with a virtually identical title starts at fol. 144 in John Cheke's edition of Leonis imperatoris de bellico apparatu liber e graeco in latinum conversus, Ioan Checo Cantabrigiensis interp. (Basel, 1554).

19. Gerard Sandelin to Lipsius, Amsterdam, 16 July 1595, in Iusti Lipsi Epistolarum, VIII: 1595, ed. Jeanine de Landtsheer (Brussels: Koninklijke Vlaamse Academie van België voor Wetenschappen en Kunsten, 2004) [hereafter ILE, 8], 408–9. Sandelin did not give a date for the drills, stating only that they took place while Maurice resided in The Hague ("dum Hagae in oceio est"). Since the count left The Hague on 1 July (Mulder, Journaal, 1:601), the exercises took place some time before then. Sandelin also stated that Maurice got his idea out of "Fabricio"—no doubt a reference to Fabrizio Colonna, the leading character in the military dialogues in Niccolò Machiavelli's Art of War, first published in 1521, because in book II, "Fabrizio" advocated forming infantry into battalions of 450 men, of whom 300 were to be "shieldbearers" as in Roman times (Machiavelli, The Art of War, 61).
Roman legions always defeated the Phalanxes, but they did so in formation," he thundered; they did not pit warriors against each other as individuals.20

Lipsius's criticism reflected his further reading and research in Classical texts for a new book, De Militia Romana, which included a whole section on drill, full of quotations from Greek and Roman authors. The Plantin press of Antwerp printed 1,500 copies of the work in June 1595 and sent several of them to the North Netherlands, including one copy to be presented to Maurice of Nassau.21 The count commissioned a special French translation and, according to another correspondent of Lipsius, Maurice's "only pleasures" while on campaign that summer consisted of reading De Militia and using its precepts to "drill his troops frequently."22

Antonis Duyck, a political associate of Maurice, left a striking eyewitness account of these drills. On 6 August 1595, while the Dutch army lay encamped, waiting to see what their Spanish enemies would do, Maurice brought out the "great shields" specially made for him in the Roman style to test once again whether men armed with them could break through pike formations "as they had already done in The Hague." This time, however, he deployed "a battalion"—several hundred men—not just 100 as in The

20. Lipsius to Sandelin, Leuven, 4 August 1595, in ILE, 8:452–54: "Romanae semper legiones phalangetas vicerunt, sed junctae." Arnaldo Momigliano, "Polybius between the English and the Turks," in Momigliano, Sesto contributo alla storia degli studi classici e del mondo antico, Storia e litteratura: Raccolta di studi e testi, 149 (Rome: Edizioni di storia e letteratura, 1980), 135–38, also discussed this exchange between Lipsius and Sandelin and noted presciently that "The text of these two letters would repay close analysis" (p. 135 n. 11). It is an honor to follow the advice of such a distinguished mentor.


22. Franciscus Raphelengius to Lipsius, 29 August 1595, ILE, 8:513–17. Maurice also had a French translation made (my thanks to Jeanine de Landtsheer, who identified the manuscript La milice romaine in the Koninklijke Bibliotheek, 's Gravenhage, The Netherlands, as a translation of Lipsius and not of Patrizi, as the Library's catalogue claims). Count Johan of Nassau also gave De Militia a close reading; see his extensive German summary, published in Hahlweg, Kriegsbuch, 31–86. Harald Klein- schmidt, "Using the Gun: Manual Drill and the Proliferation of Portable Firearms," Journal of Military History 63 (1999): 601–30, at pp. 603–10, argues that not one but three influences produced the "Maurician reforms"—Landsknecht "snail formation" drill, English archery commands, and Classical writers—but I have found no evidence in the surviving Dutch sources of anything except the influence of the Classics. Klein- schmidt offers no direct evidence for his statement except for an interesting (but, in itself, inconclusive) illustration from 1587, showing a captain with a "snail formation" in the background (ibid., p. 610).
Hague. Then, after two days of torrential rain which kept his troops in camp, on 9 August Maurice and Willem Lodewijk tried something very different: they ordered “a third of the army” in “various battle orders” to “turn, face about, form and reform, unite and divide, to accustom the troops to maintain their files and ranks.” One-third of the Dutch army at this point was about 2,500 men, and they clearly engaged in a good deal more than shield-drills. The Nassau cousins had thus prudently “exercised” their troops first at company strength (in The Hague), then in battalion strength (on 6 August), and finally in brigade strength (on the ninth). After this, Duyck reported, “the soldiers in the army drilled every day.”

In choosing how to exploit their invention, the Nassau cousins faced conflicting advice. Some of the very Classicists who insisted on drill also dismissed gunpowder weapons as a passing fad. Thus in The Roman Army of Polybius, Titus Livy and Dionysus of Halicarnassus (1583), Francesco Patrizi (a professor of philosophy) advocated a battle order that deployed troops in a checkerboard pattern of small units, like Roman maniples—but also assured readers that the “new invention of artillery” would not affect the traditional art of war. Lipsius, who relied heavily on Patrizi, likewise argued in De Militia Romana that modern commanders should give up their guns and stick to pikes, javelins, shields, catapults, and the other weapons whose enduring value had been proved by the Romans. Other Classicists, by contrast, argued that

23. Mulder, Journaal, 1:636. Duyck estimated the size of the army at 7,800 foot and 1,000 cavalry on 24 July (ibid., 1:619). Hahlweg, Antike, 300–301, prints the schedule of drills, and the descriptions of Duyck.

the advent of gunpowder invalidated all Roman precedents. Joseph Justus Scaliger, who succeeded Lipsius at Leiden University, predicted in 1581 that “if the prince of Orange relies only on counselors who cannot get beyond Livy,” his Spanish adversaries “will soon tear out his beard.” Later, Scaliger festooned his copy of Lipsius’s *De militia romana* (a present from the author) with dismissive marginal comments about the lack of critical rigor (such as using Vegetius as a source on warfare in the days of Polybius, 500 years earlier) and the weakness of the overall argument: “Asinina omnia haec” (This is all rubbish), “Ridicule errat” (What a stupid mistake), “Falleris” (You’re wrong!) He even spitefully told his students that Lipsius had merely plagiarized Patrizi.²⁵

In the event, Willem Lodewijk decided to read the key Roman sources for himself and, when he met Maurice at Arnhem in October 1594, “one day, as we traveled together in a closed coach, I explained to Your Excelleney [Maurice] how Hannibal, with 40,000 infantry, had surrounded and vanquished 70,000 Romans” at the battle of Cannae in 216 BCE “and that I had taken the trouble to calculate by conjecture the formation of each army.” Maurice showed great interest, which prompted Willem Lodewijk “to research, in my leisure time and sometimes instead of drilling my troops, the order and deployment at this battle of Cannae.” He first consulted the standard Latin translation of the detailed account of the battle in Polybius’s *Roman Histories*, but found it ambiguous. He therefore commissioned an entirely new translation of the Cannae passage, which shed more light on how Hannibal had fought and won. Then he “sketched out the deployment of the two armies reckoning each soldier took up a space three feet across and seven feet deep.”²⁶ In April 1595 Willem Lodewijk sent his cousin a copy of the new translation, his calculations, and some sketches of the probable battle order, together


²⁶ Werner Hahlweg, “Wilhelm Ludwig von Nassau und das Cannae-Problem,” *Nassauische Annalen* 71 (1960): 237–42, especially pp. 240–41 (a transcription of Willem Lodewijk’s letter to Maurice, 19 April 1595). Polybius of Megalopolis was a young Greek nobleman who led a contingent of Rome’s allies against the Macedonian phalanxes in 168 BCE at the battle of Pydna. Since Rome felt that its allies had lacked enthusiasm, it brought 1,000 of their young noblemen to Italy as hostages for future good conduct. Polybius was one. He became tutor to the son of Scipio Aemilianus, the victor of Pydna, and the grandson by adoption of the Roman commander at Cannae, Aemilius Paulus. This perhaps explains the vividness and detail of Polybius’s account of Cannae (see Momigliano, *Sesto contributo*, 78).
with a short treatise on the subject (which naturally cast the Dutch as the victorious Carthaginians and the Spaniards as the annihilated Romans).  

No doubt these were some of the “various battle orders” performed by the Dutch troops outside their encampment the following August, to accustom the troops both to moving in unison and to seeing musketeers appear to retreat in the face of the enemy. Drill soon became standard: in 1599, according to an eyewitness in The Hague, “The new recruits to the [Dutch] army assemble two or three times a week to learn how to keep rank, change step, wheel, and march like soldiers.” Maurice himself often took part, “and if a captain did not give or understand the right command, His Excellency told him and sometimes showed him [how to do it properly].”

In the course of 1598, Maurice also significantly enhanced the firepower of each company. Henceforth each company consisted of 135 men: thirteen officers and two pages, 45 men bearing pikes, 44 armed with a harquebus, and 30 with a musket (a smoothbore, muzzle-loading gun about 1.4 meters long that fired a lead ball that weighed over 40 grams). Equally significant, Maurice took steps to standardize the weapons used by the entire Dutch army. After extensive testing, he determined upon a single “model” for muskets and another for harquebuses, and distributed five examples of each to arms producers in Hol-

27. Hahlweg, “Wilhelm Ludwig,” 240–41. Hahlweg, Kriegsbuch, 342–47, prints the “Discours du Comte Guillaume de Nassau sur la bataille de Cannes” (beginning “Polybe dit que”); and in “Tafels V & VI” reproduces the count’s sketches prepared “par le compas” of how the two armies “must have fought” at Cannae. For more sketches by Willem Lodewijk, see Kriegsbuch, illustrations after p. 352. Manuscript copies of the treatise exist today among the papers of both Count Johan of Nassau and Margrave George of Baden-Durlach, and Maurice’s copy later appeared in print: Anibal et Scipion ou les Grands Capitaines. Avec les ordres et plans de batailles. Et les annotations, discours et remarques politiques et militaires de Mr. le Comte G. L. de Nassau, ed. C. de Mestre (The Hague, 1675). See also Hahlweg, “Griechisches, römisches und byzantinisches Erbe,” 69–81, on the “Cannae research” by Willem Lodewijk and by George of Baden-Durlach.


29. Maurits prins van Oranje, ed. Kees Zandvliet (Zwolle: Waanders, 2000), 251, quoting Filip von Hainhofer. In addition, according to Johan of Nassau, “every day” one company of the garrison of Groningen “went out into the fields to drill”: Johan of Nassau to his father, 6 May 1598, in Groen van Prinsterer, Archiæae, 2e série, 1:403.

30. The Orde op de wapeninge issued by the States-General in 1599 specified that all muskets must be able to fire “12 bullets to the pound” (one-twelfth of an Amsterdam pound of 494 grams, or 41.2 grams): Michel de Jong, “Staet van Oorlog,” Wapenbedrijf en militaire hervormingen in de Republiek der Verenigde Nederlanden, 1585–1621 (Hilversum: Verloren, 2005), 30–31.
land, with orders that all the weapons they produced in future must be made to the same design and must fire a bullet of standard caliber. To implement this program, the Dutch Republic spent far more on weapons in 1599 than in any other year between 1586 and 1621.31

Volley Fire in Action: The Battle of Nieuwpoort and After

This huge investment in time and money almost led to catastrophe when in 1600 the Dutch Republic deployed its newly trained and equipped troops in an ambitious campaign. In 1572 Maurice’s father, William of Orange, had orchestrated a massive uprising against Spanish rule in the Netherlands, but for the next two decades the soldiers maintained by Spain in the Low Countries (known as the Army of Flanders) gradually reconquered most areas in revolt. Then, between 1590 and 1598, while the Spanish regime in Brussels diverted most of its forces to fight in France, Maurice besieged and recaptured a number of strategic towns along the Republic’s borders, but he tried to avoid battles with the Spanish veterans who were reputed, even by their enemies, to be “the finest soldiers at this day in Christendom.”32 In 1599, now at peace with France, the Spanish resumed the initiative and invaded the island of Bommel, only a day’s ride from the Dutch capital. Maurice deployed his troops but made little headway; he therefore begged the States-General to send a representative to help him “determine how the enemy could best be hindered, with the least risk to the Republic.” The States-General, consisting of representatives from each of the seven provinces still in revolt against Spain, exercised de facto sovereignty in the Republic and had visited Maurice’s headquarters on numerous occasions in the previous decade. Now, led by their legal adviser Johan van Oldenbarnevelt, who also served as political mentor to Maurice, twenty years his junior, the entire States-General twice visited Bommel to assess the situation and to give their advice. Oldenbarnevelt paid three further visits to Maurice on his own.33

31. De Jong, “Staet vaan Oorlog,” 35–36 (on the “models”) and 41 (expenditure: over 600,000 florins, more than double the total for 1598).
33. Maurice to the States-General, 16 May 1599, and Resolution the following day, in Resolutien der Staten-Generaal van 1576 tot 1609, ed. Nicolaas Japikse, 14 vols. (The Hague, 1915–70) [hereafter RSG], 10:425–26. Jan Den Tex, Oldenbarnevelt, 5 vols. (Haarlem: Tjeenk Willink, 1960–72), 5:11–12, lists the occasions on which Oldenbarnevelt and the entire States-General visited “the camp of His Excellency” in 1591, 1593, 1594, 1595, and 1599. One of their visits in August 1595 coincided with the first “exercises” performed by the army (see p. 344 above).
Although the Dutch troops managed to halt the Spanish advance, they could not prevent the building of two fortresses on Bommel island. Maurice determined to recapture them immediately and in April 1600, after the first fortress surrendered, he invited representatives of the States-General to visit his camp again to discuss what to do with the army once the second one fell. The delegates from Zealand called for an attack on the province of Flanders, largely under Spanish control, and they put forward two potential targets: Sluis, just across the Scheldt estuary and base to a squadron of Spanish galleys; and Dunkirk, over 100 sea miles to the south and home to a flotilla of privateers. Both preyed on Dutch shipping. The States-General debated these and other options, and on 18 May voted to launch a surprise amphibious expedition of some 10,000 infantry and 1,200 cavalry, transported on over 1,200 ships, against Dunkirk and neighboring Nieuwpoort. The following day, when the second fortress on Bommel surrendered, Maurice agreed to lead the operation. Orders went out to assemble all the necessary soldiers, supplies, and ships by 5 June 1600.34

The political leaders of the Republic and their commanding general favored this venture for very different reasons. The States-General had three goals. First, they expected the capture of Dunkirk and Nieuwpoort to end the privateering menace and so reduce significantly Dutch shipping losses. Second, they welcomed the invasion of enemy territory as a chance to reduce the burden of the war, replacing Dutch taxes with “contributions” extorted from Flanders. Third, they hoped a successful campaign would trigger a revolt in the southern provinces against Spanish rule, and so lead to a united Netherlands. Maurice had little interest in these goals; instead, he aimed to add two more successful sieges to his impressive military record and, in doing so, to strengthen the defensive perimeter of the Republic. He began to question the wisdom of the plan once it became clear that the expeditionary force could not be ready in time, compromising the element of surprise. He also worried that committing so many troops to the Flanders expedition might leave the heart of the Republic exposed, should the Spaniards mount another attack. On 3 June he asked the States-General to raise more troops so that he could create two armies, one to “amuse the enemy and to preserve order” while he “attacked the enemy with the other.”35


35. Secret Resolution of 3 June 1600, in RSG, 11: 29–30. Jan Piet Puype, “Victory at Nieuwpoort, 2 July 1600,” in Van der Hoeven, The exercise of arms, 69–112, at p. 74, quotes an entry from Antonis Duyck’s journal for 26 May that Maurice stated “that this campaign went very much against the grain with him and [was] against his
The politicians agreed, but complained about the delays in preparing the expedition. In response, on 16 June Maurice took a fateful step: once again he asked the States-General to provide him with advice in person and sail with him on the campaign itself. The politicians eagerly accepted because, on the one hand, they would be “on hand to direct the campaign against Dunkirk and to make sure that it did not get diverted to something else”; and, on the other hand, they could insist that the army collected the largest possible sums in contributions from the communities along its route (they even brought along a special treasurer to handle the anticipated riches). On 17 June the entire States-General (some thirty persons) left The Hague at dawn and at sundown joined their army, now at last embarked aboard the fleet.

Strong contrary winds prevented that fleet from sailing down to Dunkirk and, although Maurice kept all his forces embarked so that they could sail at a moment’s notice, the rough seas caused injury to many horses. On 20 June he therefore summoned the States-General and argued that they must abandon their plan for an amphibious attack on Dunkirk and Nieuwpoort in favor of either a march overland or an attack on Sluis. The politicians, “fearing that the slightest diversion for any reason might undermine the whole enterprise against Dunkirk, on which they were so keen,” deferred their decision “till the morning to see if the weather might change.” When it did not, they agreed to sail to the northern coast of Flanders, where the expeditionary force disembarked and prepared to march overland to Dunkirk, some eighty miles away. The politicians disembarked, too, and accompanied the army as it traveled through the heart of Spanish Flanders. They passed their time in writing and sending letters that threatened to torch any town or village along the way that refused to pay “contributions” instantly, until on 27 June they reached Ostend, the only port in Flanders under Dutch

advice and that he thought it would be better to try it on the Brabant side” (Mulder, Journaal, 2:615); but Puype fails to say that, according to the editor of the journal, this was a later insertion in the text (2:615 n. 1). Den Tex, “Maurits en Oldenbarnevelt,” 65, quotes a passage in the Historie written by Everhart van Reyd, Willem Lodewijk’s secretary, claiming that his master expressed strong disapproval of the campaign in advance, but Van Reyd wrote several decades later. I have therefore taken the “secret resolution” of 3 June as the best indication of the state of strategic planning at this stage.

36. Resolution of 16 June “opte instantie van Zijn Excellentie,” in RSG, 11: 20–21; Mulder, Journaal, 2:637. Den Tex, Oldenbarnevelt, 2:361, suggests that Oldenbarnevelt also welcomed the opportunity to accompany the army because he could better exploit the popular revolt he anticipated as soon as the expedition reached Flanders.

control. Maurice and his army continued down the coast towards Nieuwpoort, twenty miles away, while the politicians remained in Ostend.

The Dutch had achieved a remarkable feat—they had assembled a large army and navy in a remarkably short time and struck deep into enemy territory with impunity—but they had received little by way of “contributions,” so that by the time they reached Ostend, their troops lacked enough food. The States-General took immediate steps to remedy this, but neither they nor Maurice remedied their ignorance of the enemy’s movements. They had convinced themselves that their adversaries would never dare to attack them, assuming that the troops left behind to “amuse” the Spaniards would tie down the soldiers still loyal to the Brussels regime, while shortage of money would paralyze the rest through mutinies. After all, over twenty mutinies had broken out in the Spanish Army of Flanders in the 1590s and, when the Dutch began their invasion of Flanders in 1600, a corps of over 2,000 mutineers defied their government from the fortified town of Diest in Brabant. The States-General believed only intelligence that supported these assumptions, such as news about the chaos caused by the mutineers in the surrounding countryside and rumors of disaffection and division throughout the South Netherlands.38 They remained unaware that, on hearing of the Dutch invasion, the mutineers of Diest responded to desperate appeals from

38. Willem Lodewijk to his father, 19 June 1600 OS, in Groen van Prinsterer, Archives, 2e série, 2:14, reporting that “We have no news from the Spanish side except that the mutinies still continue.”
Brussels and joined loyal units to form an army slightly larger than the force commanded by Maurice. On 1 July, this army overcame some astonished Dutch sentries and reached the seashore between Ostend and Nieuwpoort, dividing Maurice from his political masters.

The States-General sought to micromanage the sudden crisis. On 1 July they sent Maurice “four or five separate letters” in which, realizing that the Spaniards intended to attack in full strength the next morning, they “earnestly begged and admonished His Excellency” to put his army in good order and “not to divide his forces.”\(^\text{39}\) Maurice resented the fact that “the States had so explicitly demanded this campaign, as if the Republic could not be preserved in any other way,” so that he had no choice but to fight, but when some urged him to throw up field defenses, he replied that “he would give battle, that we must strike, that blood must be shed this day, and that he needed no other defense than the pikes and muskets” of his troops. He therefore “placed his trust, after God, in the perpetual drilling of his troops”—or, in the words of one of his generals, in “that skill and dexterity we presumed to excel our enemies in, which was the apt and agile motions of our battalions.”\(^\text{40}\) After six years of practice, volley fire was about to meet its ultimate test: battle.

On 2 July, the two armies deployed on the beach and sand dunes near Nieuwpoort and fought furiously for two hours. A contemporary engraving shows ranks of Dutch and Spanish musketeers in the sand dunes exchanging fire at almost point-blank range, and the accompanying text notes that “the troops in the dunes became heavily engaged, and began heavy firing with musket and harquebus.” According to one eyewitness, the sound of the small-arms fire was “frighteningly loud, so that one could not hear shots, shouts, drums or trumpets.”\(^\text{41}\) Soon after the battle Mario Stivive, an Italian foot soldier, wrote that Maurice had drawn up his troops “very well, placing in front a corps ["squadron"] of 4,000 musketeers and in front of these musketeers some six pieces of artillery. Behind these musketeers stood two more squadrons of over 1,000 pikemen, each one with 500 pikes, with the cavalry outside on the wings. All were in very good order. In addition, he placed 70 or 80 musketeers on certain sand hills to flank our troops.” Then, through “the great smoke from the muskets,” the Dutch cavalry, “which did its duty in an excellent way, began to charge our infantry, and our pikemen came up against

\(^{39}\) Resolution of 1 July 1600, in RSG, 11:37.

\(^{40}\) Mulder, Journaal, 2:666; Van Reyd, Historie, 429; Francis Vere, Commentaries (Cambridge, 1657), 87–88 (Duyck and Vere were with Maurice, while Van Reyd was Willem Lodewijk's secretary, so all three men knew whereof they spoke.)

\(^{41}\) J. J. Orlers and M. van Haesten, Den Nassausche Lauren-crans (Leiden, 1610), fol. 156 and battle plan; Mulder, Journaal, 2:671 (making clear that he described the “musquetten en roers”).
their musketeers."⁴² Count Ludwig Günther of Nassau, who commanded
the Dutch cavalry, explained what happened next:

Our infantry advanced towards the enemy. The enemy's cavalry, see-
ing our men advancing in such good order, because they were well
supported, wanted to take refuge among their infantry in the dunes;
but their own ranks broke and, seeing themselves still pressed by our
cavalry, they decided on headlong flight. The hail of volleys [la gresle
des harquebusades] then began to cease.

Although no account of the battle specifically mentions the Dutch
countermarch, Stivive's statement that Maurice placed his 4,000 muske-
teers in a single bloc implies that they did so, because that is the only
way such a large formation could have maintained a steady rate of fire;
and Ludwig Günther's emphasis on the infantry advancing as they fired
"harquebusades" seems unequivocal.⁴³ Eventually the Spaniards
retreated and, according to their own second-in-command, "fell into
confusion and would take no more orders from him."⁴⁴

Constant drill and superior command-and-control had thus turned
Willem Lodewijk's "stippelckens" into a production line of death: the
Dutch army killed some 4,000 of their adversaries in the battle, and took
hundreds more prisoners (including the Spanish second-in-command).

⁴². "Discorsi di quello che è passato qui in Fiandra," sent by Mario Stivive (in
the regiment of Don Alfonso d'Avalos) to the duke of Mantua, Bruges, 16 July 1600,
Archivio Gonzaga 575/30-2, Archivio di Stato, Mantua, Italy.
⁴³. Ludwig Günther of Nassau to his father Johan, 20 July 1600, in Groen van
Prinsterer, Archives, 2e série, 2:33. In his reconstruction of the battle, Puype, "Victo-
ry at Nieuwpoort," 110, also concludes that the Dutch infantry "could not have
done otherwise" than countermarch. Vere, Commentaries (Cambridge, 1657), 87-88,
claimed that "by the situation of the country, that skill and dexterity" were "utterly
taken from us"—but Vere was severely wounded at an early stage of the battle and so
did not see what Stivive and others saw.
⁴⁴. A. Foeck to the States of Utrecht, 4 July 1600 NS, conveying the report of
Captain van der Borch, sent by Maurice to announce the victory, Archief Staten van
Utrecht 282-2, Het Utrechts Archief, Utrecht, The Netherlands. The captain claimed
to have heard these words "from the Admiral [of Aragon] himself"—the Spanish
deputy commander—immediately after the Dutch took him prisoner. I thank Olaf van
Nimwegen for graciously sharing this document with me.

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Fig. 4 (opposite page). The early stages of the battle of Nieuwpoort, 2 July 1600.
The Dutch are on the left. The print shows the exchange of small arms fire in
the dunes (top center) and, on the beach and in the center, the Dutch field
artillery that would gun down a Spanish cavalry charge at the height of the
battle. (Courtesy J. J. Orlers and M. van Haesten, Den Nassausche Lauren-crans
[Leiden, 1610], the first print following fo. 156. Published with permission from
the copy in the Library of the Koninklijke Legermeuseum, Delft.)
For Maurice, "this victory was wonderful, as much because he won it in his enemy’s territory as because he won it over a victorious enemy, for the battle mostly involved Spaniards and Italians, who were esteemed the strongest force of the enemy." Yet Nieuwpoort fell far short of Cannae. The remnants of the Spanish army conducted an orderly retreat, and their continued proximity made Maurice’s position untenable: he had lost 1,000 men, with 700 more severely wounded, and he lacked food to sustain the rest. On 3 July he therefore resolved to lead his troops back to their secure base at Ostend for a few days to rest, eat, and recover.

This decision appalled the States-General, who believed that although “it was good for the soldiers, it was dangerous for the Republic” because the best chance of forcing the garrison of Nieuwpoort to surrender was “while their fear was great, so that desperation would come soon.” On 4 July they badgered their general to “hold firm to the masterplan [hooftdessein] as they called it” and open siegeworks. In pouring rain, the troops grimly set off towards Nieuwpoort, where they started digging trenches, but food soon ran short again. On 8 July, Maurice alerted the States-General to the “difficulties” involved in trying to blockade a town whose fortifications stretched nine miles, defended by a large garrison, with a strong enemy force nearby. Unconvinced, the politicians loftily suggested that “His Excellency should be able to take the town with a furious battery in a few days, without surrounding it with numerous siegeworks” and, the following day, the entire States-General traveled to Maurice’s camp to convince him. The politicians “made clear that they had not come to contradict His Excellency concerning the difficulties he had cited,” but rather “left everything to His Excellency’s discretion, since he understood the matter better.” Nevertheless they insisted that he should “capture at least this place, so as to maintain the reputation of the campaign and start the contributions coming from Flanders again.”

In view of the “vehemence” with which his political masters stuck to their “resolution to bring the army here”—placing prestige and profit above military prudence—Maurice persevered with the siege until the Nieuwpoort garrison launched a furious sortie that took his men by surprise. Once again he begged the States-General to call off the siege, and once again they passed the buck, “referring to His Excellency’s discretion whether to continue the siege of the said town, or to abandon it, or

45. Mulder, Journaal, 2:677.
47. Resolutions of 8–9 July 1600, in RSG, 11:43–44 (Maurice claimed that the fortifications stretched “drye mylen”; each “Dutch mile” equaled three English miles); Mulder, Journaal, 2:687. To be fair, during the 1590s Maurice had captured several towns with a “furious battery in a few days”; see the list in Van Nimwegen, “Deser landen crijchsvolck,” 501–3.
to attempt some other enterprise that would better secure the Republic.” This provocative answer brought Maurice galloping back to Ostend, where he spent an entire day spelling out the extreme danger of tying down the Republic’s elite troops so far from their home base, “since the enemy could hinder him with a reinforced army, obliging him to await the hazard of a second battle.” He begged the States-General at least to send ships to Ostend in case he had to effect an emergency evacuation. The politicians grudgingly complied but, once again, although “they referred all military exploits to His Excellency,” they refused to let him raise the siege. On 16 July Maurice therefore sent another envoy to warn his unreasonable masters that, in view of the proximity and increasing strength of the enemy, “it might be better to abandon the siege with more honor and reputation while they still could, rather than to remain in danger and confusion.” This time the States-General authorized a retreat, “provided that the munitions and other military supplies could be safeguarded,” and then they promptly boarded a ship for Holland, leaving Maurice to work out exactly how to extricate his troops while facing a more numerous enemy.48 He succeeded: having destroyed all they could not carry, the Dutch army fell back on Ostend where, after an unsuccessful attempt to capture a neighboring Spanish fortress, Maurice supervised an orderly embarkation. The last soldiers sailed back to Holland on 1 August, just six weeks after their departure.49

The impact of the Flanders campaign of 1600 in general, and of the battle of Nieuwpoort in particular, can hardly be underestimated. In political terms, they caused a fatal rupture at the heart of the Dutch state. As soon as he heard the news of the battle, Willem Lodewijk and his entourage concluded that “God Almighty took better care of us than we did ourselves.” “The danger in which the whole country now stands is so terrible,” Everhart van Reyd wrote on 6 July, that “when I think of it, I derive little joy from the outcome” of the battle. Van Reyd mostly blamed the politicians—“Oldenbarnevelt and the civilians got us into this; God, however, did not want us to perish”—but he also criticized Maurice who, he believed, had been “more lucky than wise. Even as we praise the balls [Manheitt] and discipline of His Excellency, we cannot entirely excuse him for allowing himself to be led to such an extremity by those inexperienced in war [Kriegsonerfarner]. He should have

49. Cox, Vandenocht, chaps. 7 and 8, provides the only modern account of the retreat. For the Spanish response, see Paul C. Allen, Philip III and the Pax Hispanica, 1598–1621: The Failure of Grand Strategy (New Haven, Conn., and London: Yale University Press, 2000), chap. 2.
ignored them."\textsuperscript{50} Although at this stage Maurice did not openly blame Oldenbarnevelt, many observers noticed a growing coolness between the two men as a result of their wrangles over strategy and tactics during the Flanders campaign. The rift widened steadily with the passage of time until in 1619 Maurice charged his former mentor with treason and had him executed.\textsuperscript{51}

The military impact of the Flanders campaign was mixed. On the one hand, it proved beyond all doubt that the Dutch army had “come of age.” In 1602, Willem Lodewijk boasted that the Spaniards “have learned at least this much from Nieuwpoort: that they will only hold the advantage if they take up a position from which they can mount a good defense.” Many Spaniards agreed. In 1616 Don Luis de Velasco, who had served in the Spanish Army of Flanders for over three decades, informed King Philip III that “It is striking to observe how much better the Dutch soldiers have become than they were in the time of the duke of Alba or the others who have governed these provinces since then: [one of them now] is worth twenty of those back then.” The king had already noticed. “We have tried many times to reorganize our troops in India in the European manner,” he wrote wistfully to his viceroy in Goa in 1617, “since experience has shown that without it we have suffered important losses. But now that we are at war with the Dutch, who are disciplined soldiers, it is more important than ever.”\textsuperscript{52}

The key to this Dutch superiority lay in the drill, discipline, and volley fire that now became standard practice. “In advancing towards an enemy,” the States-General decreed, musketeers must always give fire by ranks after this manner. Two ranks must alwaies make ready together . . . and give fire, first the first ranke. . . . As soon as the first [rank] are fallen away, the second [must immediately] present, and give fire, and fall [back] after them. Now as soone as the

\textsuperscript{50} Everhart van Reyn (Willem Lodewijk’s secretary) to Erasmus Stöver, 6 July 1600 NS, in Groen van Prinsterer, Archives, 2e série, 2:14–15: “Barnefelt und [die] lankrocke haben uns precipitirt”—I translate “lankrocke” (“long robes,” with the sense of togata, the civilian leaders of the Roman Republic) as “politicians.” The French envoy in the Netherlands also blamed the Dutch political leaders for “gambling their state on a single throw of the dice” and admired Maurice’s “resolution when he had to drain the dregs of their ill-conceived counsels” (Buzenval to Henry IV, 4 July 1600, in Groen van Prinsterer, Archives, 2e série, 2:41 note).

\textsuperscript{51} Den Tex, “Maurits en Oldenbarnevelt,” provides a detailed discussion of the evidence.

first two rankes doe move from their places in the front, the two rankes next to them must unshoulder their musquets, and make ready. ... And all the other rankes through the whole division must doe the same by twoes, one after another.

In 1618, the States-General amended this to produce double volleys: “Exercise for musketeers. The first two ranks get ready, take aim, and fire (and so on until all the ranks have fired).”

Although the 1600 campaign thus produced important positive tactical results, it fatally blighted strategy. Henceforth, Maurice relied more heavily than ever on Willem Lodewijk: in February 1601 he begged his cousin to meet him “before springtime comes so that we can decide together what we should do during the coming summer” campaign. In addition “I am extremely keen that you should come on campaign [with me] this coming summer.” Willem Lodewijk, for his part, now argued strenuously for strategic caution. Thus in 1601, he opposed another expedition to Flanders because it involved “the risk of a battle,” and in 1602 he begged Maurice to “avoid undertaking anything that is not justified on military grounds.” In 1607, as Maurice prepared for a new campaign, Willem Lodewijk reminded him that “we must conduct our affairs so that they are not subject to the risk of a battle, since losing one would immediately bring the prize of the Dutch Republic in its wake.” He continued, “I beg you not to be won over by the false reproaches of those who know nothing about war”—an obvious reference to Oldenbarnevelt and the other politicians, who continued to visit Maurice’s headquarters and advise him on how to wage the war. Instead, “Your Excellency should rather remain true to your own judgment, which is not to engage in battle except in extreme necessity.” Although Willem Lodewijk continued to cite the example of Cannae, he now stressed not the Carthaginians’ victory but the Romans’ defeat: “For the zeal I feel towards our country as well as towards Your Excellency, I recommend

53. The Tactiks of Aelitan, 156 (part of “The exercise of the English”: Olaf van Nimwegen informs me that this is a direct translation of the “Ordre bij sijne Excellencie, sijne gen. graeff Willem Lodewijck van Nassauw, stadthouder &c volgens de Resolutie der Ho. Mo. Heeren Staten-Generael van den 2.e may 1616”; Van Nimwegen, “Desen landen crijchsvolck,” 100, quoting the “Ordre” of 5 December 1618.

54. Maurice to Willem Lodewijk, 10 February 1601, in Groen van Prinsterer, Archièves, 2e série, 2:60–61. See also same to same, 28 February 1601, pp. 65–66, making the same pleas.

55. Willem Lodewijk to Maurice, 25 February 1601, in Groen van Prinsterer, Archièves, 2e série, 2:63–65, and same to same, 19 March 1602, p. 121. See also his identical views in same to same, 24 May 1601, pp. 81–84; and same to same, 4 August 1614, A22 IX E/352, KHA. Twelve years after that, Maurice’s successor as general, Frederik Hendrik, who had begun his military service at Nieuwpoort, expressed his reluctance ever to engage in a “hazardous battle”: Van Nimwegen, “Deser landen crijchsvolck,” 107. He, too, never fought in another one.
the last words that Fabius Maximus said on the subject to Aemilius Paulus before the battle of Cannae," he warned Maurice (namely that “if no one shall give [Hannibal] battle this year, the man will remain in Italy only to perish, or will leave it in flight”).\footnote{Willem Lodewijk to Maurice, 15 February 1607, in Groen van Prinsterer, Archives, 2e sér., 2:378–79. The count did not quote the advice of Fabius—he assumed Maurice knew it by heart—so I have quoted Polybius, “Life of Fabius Maximus” in Parallel Lives (New York: Loeb, 1906), 3:161–62. Den Tex, Oldenbarnevelt, 4:16–18, records that the States-General visited Maurice’s headquarters six times during the 1602 campaign and four times during that of 1604.} Maurice paid heed: although he continued to command the Dutch Army until his death in 1625, he never fought another battle. The Republic made peace with Spain only in 1648.

Long before this, many deprecated the risk-averse strategy of the Dutch. In 1631 John Bingham, an English veteran of Maurice’s army, wrote a book about

> The practise of the best generals of all antiquity concerning the formes of battailes. And whereas many hold opinion that it sorteth not with the use of our times, they must give me leave to be of another mind. Indeed our actions in warre are now-a-dayes onely sieges and oppugnations of cities. Battailes wee heare not of, save onely a few in France and that of Newport in the Low-Countries. But this manner will not last always, nor is there any conquest to be made without battailes.\footnote{John Bingham, The Art of Embattailing an Army, or the second part of the Aelians Tacticks (London, 1631), from the “Epistle dedicatory.”}

Later that same year, King Gustavus Adolphus spectacularly proved Bingham’s point when, after using the drill, the discipline, and the volley fire he had learned from the Dutch to win the battle of Breitenfeld, his victorious troops conquered half of Germany.

**Diffusion**

Volley fire—and the new techniques of command and control on which it depended—spread to other armies long before Breitenfeld, starting with the elite of the Ottoman infantry: the Janissaries. In 1604, Abdülkadir Efendi, secretary of the artillery corps, recorded in his chronicle that the Janissaries brought their muskets to the “drill field” in Istanbul three times a week, where they not only carried out target practice but also “formed ranks and drilled to learn the science of the musket.” The exact meaning of those words might have remained obscure but for two other descriptions. First, Abdülkadir also reported an incident from 1605 when, at the start of the Ottoman siege of Esztergom in
Hungary, the whole army deployed in battle order, apparently in an attempt to intimidate the garrison. According to Abdülkadir:

In the middle of the field, the Janissary regiments stood in three ranks, each musketeer with matches ready [to fire], and they lined up the big cannons chained in front of the Janissaries. Then, after the first rank of the Janissaries fires their muskets, the second rank fires, too. Afterwards, the rank that fired first bends double and begins to reload their muskets. And as the third rank fires, the second rank in front [of them] bends and prepares their muskets. Then, the first rank stands up and fires their muskets [again].

This unmistakably describes volley fire. Second, that same year, an Ottoman court artist who appears to have visited Christian Europe as well as serving with Ottoman troops in Hungary, painted a miniature that equally unmistakably depicts volley fire: the soldiers in the second rank are pouring powder and ramming bullets down their musket muzzles as the front rank fires. (See Fig. 5, p. 360.)

Perhaps the ideas of the countermarch spread to the Ottoman infantry by word of mouth. In 1600 a group of French mercenaries, some of whom might have learned or at least seen the technique, deserted from Habsburg to Ottoman service; in addition, the Ottoman Sultan received a report about the battle of Nieuwpoort that same year.


59. Börekçi, “A Contribution to the Military Revolution Debate,” 417–21, discusses the image from the special presentation copy of the poems of Ganizade Mehmed, also known as Nadiri, illustrated with miniatures by Nakşî, dated to 1604–5. Börekçi proves that the action depicted is a clash near Nicopolis in 1597.

Fig. 5. A miniature by Nakşı, done in 1604-5, of an encounter between Turkish and Habsburg infantry in Hungary, 1597. Note that one soldier in the second rank of Janissaries (on the right) is pouring powder down the barrel of his gun while a second is inserting a bullet. The first rank fires and the third waits with its arms shouldered. From an illustrated volume of poems: Divân-i Nadîri (Courtesy Topkapi Manuscript Library, Istanbul, MS H 889 fo. 26b. Printed with permission.)
long afterwards, the Dutch themselves offered open instruction on how to train musketeers to perform volley fire. Books formed the principal medium of diffusion, especially the illustrated instructional manuals devised by another member of the House of Nassau: Willem Lodewijk’s younger brother Johan. In 1596–98, Count Johan of Nassau prepared drawings that broke up the various “drills derived from Aelian” into a series of sketches to show the instructors of his new militia companies in Nassau-Dillingen how to teach units armed with pikes, harquebuses, and muskets to use weapons together.61 He sent his designs to Maurice, who in 1607 authorized the engraver Jacob de Gheyn to publish *The Exercise of Arms—harquebuses, muskets and pikes—according to the order of His Excellency Maurice Prince of Orange*. This book showed, step by step, how soldiers should handle each weapon in unison: a brief introduction provided the words of command, followed by striking engravings in folio format that illustrated each stage. Whereas the Inatomi manuals of the same era illustrated “32 positions” for individual marksmen, each of them different, Johan of Nassau and Jacob de Gheyn showed 42 positions for every soldier to follow in unison as they fired and loaded. Dutch and English editions of *The Exercise of Arms*—the first illustrated “how to” book ever published in Europe on any subject—came out simultaneously; translations into Danish, French, and German soon followed.62 (See Figs. 5–6, pp. 362–63.)

As with volley fire, the Nassau drill manual had an East Asian precursor. In 1562, Chinese general Qi Jiuguang (Ch’i Chi-kuang) published *A New Treatise on Disciplined Service*, an illustrated volume with sections on fighting methods, weapons, military encampments, and marching formations (as well as on warships and formations for naval defense). The book contained woodblock prints that illustrated each description. Qi intended the different sections to be read aloud to each unit as their noncommissioned officers drilled them, and so memorized by the troops. Five editions of *A New Treatise* came out in the sixteenth century, but it

61. Hahlweg, *Kriegsbuch*, 216–48, “Ein Büchlein vor krieges und bevelches Leütche,” with eighty-five colored illustrations; and ibid., 256–61 (a different system, with the drill sergeant in the middle). Count Johan claimed in 1608 that he had prepared the sketches (“abreissen”) ten or twelve years earlier (ibid., 613–16). He also mentioned a set of sketches showing cavalry maneuvers, which de Gheyn did not publish until 1640 (Puype, “Hervorming en uitstraling,” 67).

Jacob de Gheyn, Wapenhandlinghe van roers, musquetten ende spiessen ('s Gravenhage, 1607). After a short introduction, de Gheyn provided a series of 117 engravings showing each different stage required to fire and reload a musket and arquebus, and to handle the pike. Note that whereas the Inatomi manual of the same year showed thirty positions for firing and only two on how to handle the weapon, de Gheyn showed forty-one positions for handling and only one for firing. (Published with permission from the copy in the Library of the Koninklijke Legermuseum, Delft.)
had no sequels—whereas imitations of The Exercise of Arms immediately appeared.63

Plagiarism came first: in 1609 a Frankfurt printer published Instructions for Soldiers in Three Parts, in quarto format, which contained cheap woodblock copies of de Gheyn's elegant copperplate engravings. In 1615, The Art of War for Infantry by Johan Jakob von Wallhausen, military commandant of Danzig in Poland, included composite images of

63. I consulted the printed German translation: Ch'i Chi-Kuang [Qi Jiguang], Praxis der chinesischen Kriegsführung, ed. and trans. Kai Werhahn-Mees (Munich: Bernard and Graefe, 1980). See also the discussion in James F. Miller, "Ch'i Chi-
de Gheyn's figures described by 130 pages of text. A portrait of Maurice headed the title page. That same year, a *Short Description and Instruction of Military Drill*, also based on de Gheyn, appeared at Bern, perhaps prepared by the city's military engineer Valentin Friedrich, who later declared he was "a disciple faithfully trained in the Dutch military system." In 1616 John Bingham appended to his translation of *The Tactiks of Aelian* a special description of "The exercise of the English in the service of the United Provinces of the Low Countries," which described all drills including the countermarch. The title page showed Alexander the Great offering his sword in homage to Maurice of Nassau.

The Dutch also spread their innovations directly. On the one hand, the Republic's arms manufacturers accepted foreign commissions and exported vast quantities of weapons and munitions—they even offered purchasers "package deals" that included complete sets of all the equipment that a new regiment would require—turning the Republic into "the arsenal of the world." On the other hand, in 1610 Brandenburg asked for and received "two Dutch drill masters from the army of Maurice of Orange," and Dutch officers soon arrived to drill the militias of Baden, Brunswick, Hessen-Kassel, the Palatinate, Saxony, and Württemberg. In 1616, Count Johan of Nassau opened a military academy at his capital, Siegen, to educate young gentlemen in the art of war. Training at the *Schola Militaris*, with Wallhausen as its Director, took six months, and

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65. Bingham, *The Tactiks of Aelian*. Other works that described the Dutch innovations included Wilhelm Dilich, *Krieks-schule* (1607–8, composed for Heinrich Rantzau); and Jeremias de Billon, *Les principes de l'art militaire* (Rouen, 1612). Each is expertly discussed in Hahlweg, "Griechisches, römisches und byzantinisches Erbe."

students received arms, armor, relief models, and other instructional aids. They learned only the Dutch system.67

The Dutch way of war also spread to America. Archeologists at Martin’s Hundred, Virginia, one of the earliest English colonies along the Chesapeake, found a silver medallion depicting Maurice of Nassau. No doubt it belonged to Sir George Yardley, Maurice’s companion-in-arms and the first owner of the settlement, who served twice as Governor of Virginia.68 Yardley was not alone: every governor of Virginia between 1610 and 1621 had served as an officer under Maurice because the Virginia Company actively recruited Englishmen in the Dutch army and appointed those veterans who accepted to positions of command. Many leaders of other English colonies had also served in the Dutch army, including Miles Standish, who began drilling his forces in the Dutch fashion as soon as they disembarked from the Mayflower at Plymouth; John Winthrop, who entrusted each of Massachusetts Bay’s four militia companies to the veterans of the Dutch army whom he had persuaded to join him; and Thomas Dudley, who organized the defenses of the “other Puritan colony” at Providence Island in the Caribbean. “All around the Atlantic circuit of the English empire,”

Fig. 8. Silver medallion of 1613 showing Maurice of Nassau wearing the Order of the Garter, found in the 1622 ruins of Martin’s Hundred, Virginia.


68. I thank John Nolan for bringing to my attention the medallion struck to celebrate Maurice’s induction to the Order of the Garter in 1613 and for giving me a reproduction of it.
observed Stephen Saunders Webb, "English settlers obeyed the orders of Netherlands veterans."69

The Dutch Republic also shared its military innovations with non-Protestant allies. In 1649 it sent the engraved copper plates for Wallhausen’s *Art of War for Infantry* to Moscow, where the tsar had commissioned a Russian translation; it became the first book in Russian to include copper engravings and only the third secular work ever published in the country. Each colonel in the Russian army received a copy. Later that year, according to a foreign ambassador, Dutch officers who served the tsar drilled veteran cadres “almost daily, because they must remain capable of training the others who are to be enlisted.”70

**Ancient and Modern Revolutions in Military Affairs**

Today, the eagerness of the Dutch to spread awareness of a vital military innovation seems odd. Boeing does not currently sell stealth bombers on the open market, nor does the United States teach others how to make and use smart bombs. But such secrecy is a relatively new development; until recently, openness proved vital to the Western way of war because of its heavy reliance on research and technology. The competition between the numerous city-states of Classical Greece led to a capital-intensive way of war in which rivals invested heavily in technological innovations to gain the edge over enemies whose numerical


70. See Richard M. Hellie, *Enserfment and Military Change in Muscovy* (Chicago: University of Chicago Press, 1971), 187–88, on the publication of the Russian edition of Wallhausen: *Uchen’ē i khitrost’ ratnago stroeniiia pekotnykh liudei*; Ambassador Karl Anders Pommerening to Queen Christina, Moscow, 7 November 1649, *Diplomatica: Muscovitica* 39, unfol., Riksarkivet, Stockholm, Sweden, concerning Colonel Isaac van Boekhoven’s troops. On the spread of Dutch military practice in Russia, see also William Reger, “In the Service of the Tsar: European Mercenary Officers and the Reception of Military Reform in Russia, 1654–1667” (Ph.D. diss., University of Illinois, 1997), 140–47. See also the useful fourfold hierarchy for technological diffusion proposed by Keith Krause, *Arms and the State: Patterns of Military Production and Trade* (Cambridge: Cambridge University Press, 1992), 18–19: states that can create new weapons, those that can adapt them, those that can reproduce them, and those that can only operate and maintain them.
strength was roughly equal. Then, in the Persian Wars of the fifth century BCE, the Greeks found that their new military technology—by both sea and land—gave them a collective edge over more numerous foreign enemies. Likewise, during the Renaissance, capital-intensive military innovations (including the wall-smashing artillery, the artillery fortress, and the sailing warship noted above) emerged at a time of intense competition between states whose numerical strength was roughly equal. Later, as some of those states sought to establish bases on other continents, they found that their new military technology—by both sea and land—gave them a collective edge over more numerous foreign enemies.

The West’s reliance on research and technology involved two corollaries that combined to make “openness” a military necessity. The first corollary was cost. Since military research and technology is normally very expensive, individual states have rarely managed to fund all of it alone. Each was therefore forced into reciprocity, compelled to share at least some of its research and development specialties with others. The birth of the atomic bomb perfectly illustrates why and how the West’s capital-intensive way of war led to “openness.” Throughout the 1930s, defense experts in every major state closely followed the dramatic discoveries made by atomic physicists around the world. Nothing was concealed. In March 1939, as Adolf Hitler’s forces entered Prague, at a meeting in Princeton, New Jersey, the Danish physicist Niels Bohr rebuked his American colleagues for trying to conceal their efforts to create an atomic chain reaction: “Secrecy must never be introduced into physics,” he told them. German, Soviet, and Japanese atomic scientists therefore continued to read about the latest American research on the fissile properties of uranium reported in the Physical Review, right down to the issue dated 15 June 1940—the day after the German army occupied Paris.71

At their Princeton meeting in March 1939, Niels Bohr also warned his American colleagues that they would “never succeed in producing nuclear energy” alone “unless you turn the United States into one huge factory.” Although Bohr changed his mind about the need for secrecy in physics after the Germans occupied Denmark the next year, when he eventually saw the scale of America’s various atomic laboratories he puckishly reminded one of the scientists whom he had previously met at Princeton: “You see, I told you it couldn’t be done without turning the whole country into a factory. You have done just that.”72 Without the prodigious resources invested in the “Manhattan Project,” there could have been no atomic bomb—just as without the prodigious resources

72. See Rhodes, Making, 294 (Bohr’s prediction) and 500 (Bohr’s satisfaction).
invested by the Dutch government in equipping its army with standard weaponry, there could have been no victory at Nieuwpoort.

Yet although the United States managed to fund the development of the atomic bomb by itself, it could not provide the necessary intellectual capital alone. Herein lies the second corollary of the reliance of the Western way of war on research and technology: no single mind, no single group, can master all of the intellectual complexity involved. The development of two types of atomic bomb by August 1945 required not only prodigious spending, but also the willingness of U.S. politicians to listen to a multitude of gifted (if somewhat eccentric) scholars from around the world—British, Danish, German, Italian, Polish, and Hungarian as well as American—who brought their own expertise and spoke their own arcane scientific language. The success of the “Manhattan Project” reflected the genius of Leo Szilard (the Hungarian theoretical physicist who first thought of a nuclear chain reaction), Enrico Fermi (the Italian physicist who first made it happen), and John von Neumann (the Hungarian mathematician whose calculation of “implosion” underlay the plutonium bomb), as well as of the Americans Ernest Lawrence (who invented the cyclotron) and Robert Oppenheimer (who headed the Los Alamos Laboratory).

These twin corollaries of the West’s reliance on research and technology—crippling financial cost and daunting intellectual complexity—arise from the unique nature of Western epistemology: its emphasis upon understanding, controlling, and exploiting perceived regularities and irregularities throughout nature in order to create a broad corpus of knowledge. This epistemology encourages individual researchers both to formulate related questions in different fields of inquiry at the same time, and also to draw on each other’s findings. In the words of Maurice of Nassau’s contemporary Francis Bacon, “the path to science is not, like that of philosophy, such that only one man can tread it at a time.” In 1614, Bacon’s New Atlantis suggested that experimental science should take place in research institutes and described a fictional “Solomon’s House,” with a staff of thirty-three (not counting research assistants) divided into observers, experimenters, compilers, interpreters, and “merchants of light”—those who traveled in order to find and bring back knowledge discovered elsewhere. Bacon’s vision inspired others to form scientific associations such as the “Invisible College,” which would later become the Royal Society of London. By 1646 one of its leading lights, Robert Boyle, could boast that he carried out parallel research in three distinct disciplines: “natural philosophy, the mechanics, and husbandry, according to the principles of our new philosophical college that values no knowledge, but as it has a tendency to use.” In his forty printed works on these subjects, Boyle constantly stressed the need to publish
the results of experiments—including failed experiments—so that others could build on them.73

Cultures that lack the diversity and openness advocated by Bacon and Boyle—for example, those endorsing “Fundamentalist” beliefs that seek truth in revelation rather than in experiment, or those where the state micromanages all research—can still make scientific advances, but those advances will tend to be (in the phrase of Robert Merton) “singleton techniques.” “Singletons” are normally discovered by chance and, “while their impact can at times be significant, further refinements and adaptations tend to be limited and soon run into diminishing returns.”74 That is why Oda Nobunaga’s invention of volley fire and Qi’s introduction of the drill manual in the 1560s both remained “singletons.”75

Although the openness of research and technology in the West has contributed significantly to its military edge, it has also produced some problems. First, each major innovation takes a long time to complete. It required almost six years to perfect volley fire (from Willem Lodewijk’s “stippelkens” in December 1594 to Nieuwpooert in July 1600). It took over eleven years to develop the atomic bomb (from 4 July 1934, when Leo Szilard patented the idea of an atomic chain reaction in London—specifying that one of its consequences would be an “explosion”—until 6 August 1945, when “Little Boy” exploded over Hiroshima). Likewise, most components of the current RMA—remote precision guidance and control, enhanced target identification and acquisition, electronic warfare—have been present for decades. Satellites were first used for reconnaissance in 1961 and for communications in 1965, the first tactical computers came into use in 1966, and tactical missiles date from 1967. The first e-mail was sent in 1972. The same year saw the first use of “smart” weapons against a fixed target (against moving targets from 1973). Not until the collapse of the Soviet Union ended the nuclear


threat (at least temporarily) in 1989 did the military begin to integrate them into a system, however, just in time for the First Gulf War.76

A second and more obvious deleterious consequence of the openness of Western research is the risk that it will compromise military security because it involves so many people, any one of whom can share that research with an enemy. This risk explains why the Japanese Firearm Schools of the early seventeenth century classed their skills as Hiden and sought to limit access to them. The possibility that enemies of the West will appropriate its research and technology thanks to Western openness—just as the Janissaries may have learned about volley fire from Christian defectors—is the price that the West pays for developing them in the first place.

The final negative aspect of the Western way of war is that it imperils civilian control over the military, because the knowledge required to exercise that control becomes so technical that most civilians can neither access nor comprehend it. This compromises the ability of politicians to question the views advanced by their scientific and military experts. Because battle is a non-linear phenomenon, where victory often hinges on a marginal advantage, technological innovators tend to overestimate the impact of their innovations, while politicians, anxious to win decisive results quickly, tend to believe them and, in turn, overestimate the consequences of victory.

In 1600, the political leaders of the Dutch Republic misjudged both the impact of the technological edge conferred by the countermarch, and its consequences, anticipating that victory would inexorably lead to the overthrow of the enemy regime by local sympathizers. They became so convinced by this scenario that they dismissed all contrary advice, even from their own generals. Four hundred years later, some Western political leaders also misjudged both the impact of the technological edge conferred by the current RMA, and its consequences. Thus in Kosovo in 1998–99, in Afghanistan in 2001, and again in Iraq in 2003, Western politicians believed those advisers who assured them that “precision violence” could achieve their goals, with only minimal troop deployment on the ground. Furthermore, again like the Dutch in 1600, they expected that victories won by technological superiority would inexorably lead to the overthrow of enemy regimes by local sympathizers. Finally, they too became so convinced by this scenario that they dismissed all contrary advice, even from their own generals.

These parallels suggest that the story of Dutch volley fire has an important moral: namely that politicians, generals, and intellectuals must engage in a sustained dialogue in order to make the best military

76. See the excellent analysis of Freedman, The Revolution in Strategic Affairs, 21.
decision. Georges Clemenceau memorably remarked that “war is too important to be left to the generals,” but it is also too important to be left to the politicians or the intellectuals. Eliot Cohen made this argument brilliantly in his book *Supreme Command*, which evaluated the leadership style of four outstandingly successful Western supreme commanders: Abraham Lincoln, Georges Clemenceau, Winston Churchill, and David Ben-Gurion. Cohen argued that their success stemmed from an “unequal dialogue” in which each leader not only gathered and digested pertinent information from all available sources, including civilians and even foreigners, but also fashioned from this disparate data a stream of inquiries and suggestions for their generals. All four of the supreme commanders studied by Cohen became world-class nags, frequently visiting the front lines in person in order to evaluate the situation and to give advice, but they rarely overruled their generals. None of them abused their power; all of them won their war.77

The political leaders of the Dutch Republic in 1600 failed Cohen’s test. Having devised a strategy that initially enjoyed the support of their commanding general, even though it soon became apparent that they had miscalculated, the States-General forbade him to make changes, refused to accept his warnings of the consequences, browbeat him into compliance against his professional judgment—and then left him to find his own way out of the trap in which their stubbornness had placed him. The Dutch generals, by contrast, always remained open to suggestions from both military and civilian advisers: linguists, philosophers, and historians as well as scientists, whatever their ideological and political background. It is worth recalling that the reintroduction of drill (as well as the invention of volley fire) originated because the staunchly Calvinist Willem Lodewijk consulted one book written by a Catholic intellectual with no military experience (Justus Lipsius), read another composed by a pagan (Aelian) fifteen hundred years earlier, and commissioned a special translation of a third written by another pagan (Polybius) almost two millennia earlier.78

The Dutch politicians in 1600 allowed their confidence in technological innovation, and the selective use of intelligence that supported their chosen strategy, to eclipse information from all other sources, and they allowed their quest for prestige and profit to override military prudence. Such hubris led not only to the failure of the entire campaign, but


78. For striking examples of why military history is relevant to military planning, see the essays in *The Past as Prologue: The Importance of History to the Military Profession*, ed. Williamson Murray and Richard Hart Sinnreich (Cambridge: Cambridge University Press, 2006).
also to a lasting loss of confidence among their generals that helped to
eternalize the war. Holding an open dialogue with spokesmen represent-
ing other viewpoints would doubtless have led to bitter arguments, but,
in military affairs, a bitter argument is always preferable to error. As
Winston Churchill smilingly told a senior officer who disagreed with him
“very forcibly” at a military conference during the Second World War,
“You know, in war you don’t have to be nice, you only have to be right.”
Since the cost of being wrong in war is ultimately measured in human
lives, losing an argument and even losing face seems a small price to pay
for making the right decision. Supreme commanders who rely on being
“more lucky than wise” in the twenty-first century may triumph in indi-
vidual battles, but they are no more likely to win their wars than the
Dutch in 1600.